

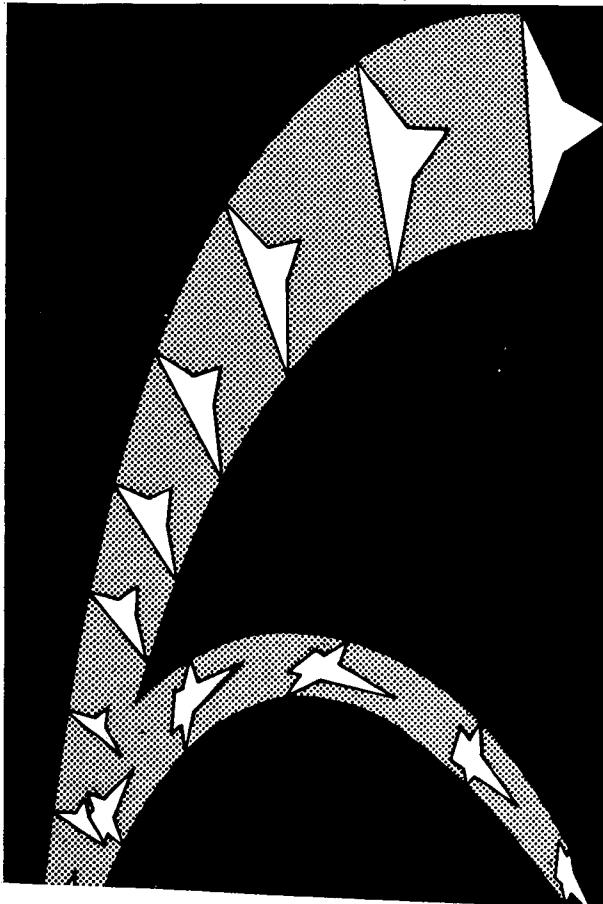
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CR-120,026

EMBER 1971

N72-14875 (NASA-CR-120026) AERODYNAMIC
CHARACTERISTICS OF THE MSFC PRESSURE FED
BOOSTERS AT HIGH ANGLES OF ATTACK (M EQUALS
Uncclas 0.6 TO 5.0) Space Shuttle J.E. Baker
11462 (Chrysler Corp.) Dec. 1971 242 p CSCL 22B G3/31

-SPACE SHUTTLE-



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SFC 14-INCH TRISONIC
WIND TUNNEL



Marshall Space
Flight Center
N A S A

SADSAC SPACE SHUTTLE
AEROTHERMODYNAMIC
DATA MANAGEMENT SYSTEM

CONTRACT NAS8-4016
MARSHALL SPACE FLIGHT CENTER

SPACE DIVISION



CHRYSLER
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NASA CR-120,026
DECEMBER, 1971

SADSAC/SPACE SHUTTLE

WIND TUNNEL TEST DATA REPORT

CONFIGURATION: 0.003366 Scale MSFC Pressure-Fed Booster Configurations

TEST PURPOSE: To Determine the Aerodynamic Static Stability Characteristics
of the MSFC Pressure Fed Booster Configurations at High
Angles of Attack.

TEST FACILITY: NASA-MSFC 14 x 14 inch Trisonic Wind Tunnel

TESTING AGENCY: Lockheed Missiles & Space Co., Huntsville Research & Engineering
Center

TEST NO. & DATE: MSFC TWT 518; 2 - 5 December 1971

FACILITY COORDINATOR: Jim Weaver, NASA-MSFC

PROJECT ENGINEER(S): John Baker, LMSC-HREC

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Contract NAS8-4016

Amendment 153

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ABSTRACT

Experimental aerodynamic investigations were conducted in the NASA/MSFC 14 x 14 Inch Trisonic Wind Tunnel during early December 1971 on 0.003366 scale models of the MSFC space shuttle pressure fed booster configurations. The basic configurations tested were a 40° cone/cylinder/ 13° flare designated the MSFC Pressure Fed Booster and a 35° cone/cylinder designated the MSFC Pressure Fed Booster Configuration X. Six component aerodynamic force and moment data were recorded over a Mach number range from 0.6 to 5.0 at angles of attack from $+20$ to $+60^{\circ}$ at 0° sideslip and over a sideslip range from -10° to $+10^{\circ}$ at 31° and 52° angles of attack. Primary configuration variables for the two basic pressure fed booster configurations were fin size and fin dihedral position.

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I N T R O D U C T I O N

Two basic NASA/MSFC Pressure Fed Space Shuttle Boosters have been aerodynamically investigated to determine their aerodynamic static stability characteristics at high angles of attack. The boosters are designated the MSFC Pressure Fed Booster and the MSFC Pressure Fed Booster Configuration X. Parametric data over the Mach number range of 0.6 to 5.0 at angles of attack from 20° to 60° were obtained primarily for fin size and fin dihedral position. Configurations and attitudes investigated are shown in the Dataset Collation section.

CONFIGURATIONS INVESTIGATED

Two basic pressure fed booster configurations were investigated: a 40° cone/cylinder/ 13° flare designated the MSFC Pressure Fed Booster and a 35° cone/cylinder designated the MSFC Pressure Fed Booster Configuration X. Component configuration symbols and descriptions are listed as follows:

<u>Symbol</u>	<u>Descriptions</u>
$N_1 B_1$	MSFC Pressure Fed Booster body with 40° conical nose, 27 ft. diameter full scale cylindrical body and 13° aft flare. Full scale length is 178.8 ft. Five rocket engines shown in Figure 3 located on the base.
F_2	Two 250 sq. ft. full scale fins located at various dihedral positions on the flare of $N_1 B_1$. Fin dihedral positions are shown in Fig. 11.
F_3	One 250 sq. ft. full scale fin located vertically on the lower surface of the flare of $N_1 B_1$ (Fig. 4).
F_4	One 600 sq. ft. full scale fin located vertically on the lower surface of the flare of $N_1 B_1$ (Fig. 5).
F_6	Two 600 sq. ft. full scale fins located at various dihedral positions on the flare of $N_1 B_1$. Fin dihedral positions are shown in Fig. 11.
TS	Number 120 carborundum transition strip 0.075 in. wide located longitudinally on $N_1 B_1$. Transition strip location is shown in Fig. 6.
$N_2 B_2$	MSFC Pressure Fed Booster Configuration X body with 35° conical nose and 41 ft. diameter full scale cylindrical body. Full scale length is 145 ft. (Fig. 9)
F_7	Two 672 sq. ft. full scale fins located at various dihedral positions on the aft end of $N_2 B_2$. Fin dihedral positions are shown in Fig. 10.

Model dimensional information for these components is given in the model component description sheets which follow the figures.

TEST MSFC 518

DATA SET/RUN NUMBER

COLLATION SUMMARY

 PRETEST POSTTEST

DATA SET IDENTIFIER	CONFIGURATION	SCHD.	PARAMETERS/VALUES	NO. of RUNS	MACH NUMBERS (OR ALTERNATE INDEPENDENT VARIABLE)										TEST RUN NUMBERS				
					α	β	R	0.6	0.8	0.9	1.0	1.1	1.2	1.46	1.96	2.74	3.5	4.96	
R54 001	N ₁ B ₁		A 0 -	7	001/0			002/0			003/0	004/0		063/0	064/0		065/0		
002			B 0 -	6					007/0		006/0	005/0		062/0	067/0		066/0		
003	N ₁ B ₁ F ₂		A 0 30	3	009/0			012/0			011/0								
004			B 0 T	3	013/0			008/0			010/0								
005			50 C	2				014/0			015/0								
006			30 C	3	018/0			017/0			016/0								
007	N ₁ B ₁ F ₆		A 0	3	042/0			041/0			043/0								
008			B 0	3				040/0			039/0						072/0		
009			50 C	2				046/0			047/0								
010			30 C	2				045/0			044/0								
011	N ₁ B ₁ F ₂		A 0 0	1							030/0								
012			B 0 T	1							029/0								
013	N ₁ B ₁ F ₂ F ₃		30 C	1							031/0								
014	N ₁ B ₁ F ₆		A 0	3	036/0			035/0			034/0								
015			B 0	2				037/0			038/0								
016	N ₁ B ₁ F ₆ F ₄		30 C	1							033/0								
017	N ₁ B ₁ F ₂		A 0 45	1							027/0								
018			B 0 T	1							028/0								
019			30 C	1							026/0								
020			50 C	1							025/0								

1	7	13	19	25	31	37	43	49	55	61	67	75	76	10	
C L M	I C N	I C Y	I C B L	I C Y N	C A	C A B	C A F	C A C	X C P						

COEFFICIENTS: IDPVAR(1) IDPVAR(2) NDV

α or β : A: $\alpha = 20^\circ$ to 40°

SCHEDULES: B: $\alpha = 40^\circ$ to 60°

C: $\beta = -10^\circ$ to $+10^\circ$

TEST MSFC 518 DATA SET/RUN NUMBER
COLLATION SUMMARY

PRETEST
 POSTTEST

1	7	13	19	25	31	37	43	49	55	61	67	75 76
C LM	C N	C Y	C BL	C YN	CA	C A B	C AF	C AC	X CP			10

COEFFICIENTS: A: $\alpha = 20^\circ$ to 40° B: $\alpha = 40^\circ$ to 60° C: $\beta = -10^\circ$ to 10° D: $\alpha = 30^\circ$ to 40°

SCHEDULES

⇒ IDPVAR(1) | IDPVAR(2) | NDV

NASA-MSFC-MAF

TEST MSFC 518 DATA SET/RUN NUMBER
COLLATION SUMMARY

88

PRETEST
 POSTTEST

1 7 13 19 25 31 37 43 49 55 61 67 75 76
C L M C N CY C B L C Y N CA CAB C A F C A C X C P 10

COEFFICIENTS: A: $\alpha = 20^\circ$ to 40° B: $\alpha = 40^\circ$ to 60° C: $\beta = -10^\circ$ to 10°

a or β

SCHEDULES

TEST FACILITY DESCRIPTION

The Marshall Space Flight Center 14" x 14" Trisonic Wind Tunnel is an intermittent blowdown tunnel which operates by high pressure air flowing from storage to either vacuum or atmospheric conditions. A Mach number range from .2 to 5.85 is covered by utilizing two interchangeable test sections. The transonic section permits testing at Mach 0.20 through 2.50, and the supersonic section permits testing at Mach 2.74 through 5.85. Mach numbers between .2 and .9 are obtained by using a controllable diffuser. The range from .95 to 1.3 is achieved through the use of plenum suction and perforated walls. Mach numbers of 1.44, 1.93 and 2.50 are produced by interchangeable sets of fixed contour nozzle blocks. Above Mach 2.50 a set of fixed contour nozzle blocks are tilted and translated automatically to produce any desired Mach number in .25 increments.

Air is supplied to a 6000 cubic foot storage tank at approximately -40°F dew point and 500 psi. The compressor is a three-stage reciprocating unit driven by a 1500 hp motor.

The tunnel flow is established and controlled with a servo actuated gate valve. The controlled air flows through the valve diffuser into the stilling chamber and heat exchanger where the air temperature can be controlled from ambient to approximately 180°F. The air then passes through the test section which contains the nozzle blocks and test region.

Downstream of the test section is a hydraulically controlled pitch sector that provides a total angle of attack range of 20° ($\pm 10^\circ$). Sting offsets are available for obtaining various maximum angles of attack up to 25°.

TABLE I

TEST CONDITIONS
TEST 518

BALANCE UTILIZED: MSFC N0. 232 Balance

CAPACITY:

ACCURACY:

COEFFICIENT TOLERANCE:

NF	300 lbs.
SF	143 lbs.
AF	50 lbs.
PM	400 in-lbs.
YM	192 in-lbs.
RM	100 in-lbs.

— — — — —

COMMENTS :

DATA REDUCTION

Six component force and moment data were recorded using an internal strain gage balance. Aerodynamic coefficients were calculated for the body and stability axis reference systems. Data reduction included an axial force static tare, and where applicable a blade sting slot correction to the balance recorded data. Base and cavity pressures were measured to determine base axial force and a sting cavity axial force correction. The model reference dimensions utilized in reducing the data are listed below:

MSFC Pressure Fed Booster

$$S_{ref} = \text{Booster Body } (N_1 B_1) \text{ cylinder cross sectional area} = 0.933 \text{ in.}^2$$
$$l_{ref} = b_{ref} = \text{Booster body } (N_1 B_1) \text{ length: from nose to aft end of } 13^\circ \text{ flare} = 7.223 \text{ in.}$$

The moment reference center (MRC) is on a line coincident with the body longitudinal centerline 60 percent of the body length aft of the nose.

$$\text{MRC} = 60\% \text{ body length aft of nose} = 4.334 \text{ in.}$$

The moment reference center location is shown in Fig. 3

MSFC Pressure Fed Booster Configuration X

$$S_{ref} = \text{Booster body } (N_2 B_2) \text{ cylinder cross sectional area} = 2.159 \text{ in.}^2$$
$$l_{ref} = b_{ref} = \text{Booster body } (N_2 B_2) \text{ length: from nose to aft end of cylinder} = 5.859 \text{ in.}$$

The moment reference center (MRC) is on a line coincident with the body longitudinal centerline 60 percent of the body length aft of the nose.

$$MRC = 60\% \text{ body length aft of nose} = 3.515 \text{ in.}$$

The moment reference center location is shown in Fig. 9

Two base pressures and one cavity pressure were recorded and used to determine base axial force C_{A_B} and a cavity correction to total axial force C_{A_T} .

$$C_{A_B} = - \frac{C_{P_1} A_{B_1}}{S_{ref}} - \frac{C_{P_2} A_{B_2}}{S_{ref}} - \frac{(C_{P_1} + C_{P_2})}{2} \frac{A_C}{S_{ref}}$$

$$C_{A_T} = C_{A_{bal}} + \left[C_{P_C} - \frac{(C_{P_1} + C_{P_2})}{2} \right] \frac{A_C}{S_{ref}}$$

Base and cavity areas for the two basic booster configurations are listed below.

Configuration	A_{B_1} (in. ²)	A_{B_2} (in. ²)	A_C (in. ²)	Planview Blade Cutout Area (in. ²)
N1B1	0.5466	0.6525	0.3673	0.1628
N2B2	0.7250	0.7250	0.4069	—
N2B2F7	1.2367	0.7250	0.4069	—

The base areas listed for N1B1 were used for all configurations fins on and fins off. The base area of the fins was added to A_{B_1} for configuration X runs with fins on.

Base pressure 1 was located on the upper half of the body base and base pressure 2 was located on the lower half of the body base. For configuration X runs with fins on base pressure 1 was located at the juncture of the left fin with the body base.

TABLE II. SADSAC NOMENCLATURE OF AERODYNAMIC COEFFICIENTS

COEFFICIENT	COEFFICIENT NAME	SADSAC NOMENCLATURE		
		BODY AXIS	STABILITY AXIS	WIND AXIS
C_A	Total Axial Force	CA	-	-
C_{AB}	Base Axial Force	CAB	--	-
C_{AF}	Forebody Axial Force	CAF	-	-
C_D	Total Drag Force	-	CD	CDTOTL
C_{DB}	Base Drag Force	-	CDB	CDBASE
C_{DF}	Forebody Drag Force	-	CDF	CDFORE
C_L	Lift Force	-	CL	CL
C_N	Normal Force	CN	-	-
C_Y	Side Force	CY	CY	CC
C_l	Rolling Moment	CBL	CSL	CWL
C_m	Pitching Moment	CLM	CLM	CPM
C_n	Yawing Moment	CYN	CLN	CLN
L/D	Lift-To-Drag Force Ratio	-	L/D	CL/CD
L/D	Lift-To-Forebody Drag Force Ratio	-	L/DF	CL/CDF
N/A	Normal-To-Axial Force Ratio	N/A	-	-
N/A	Normal-To-Forebody Axial Force Ratio	CN/CAF	-	-

SUMMARY DATA PLOT INDEX

TITLE	PLOTTED COEFFICIENTS SCHEDULE	CONDITIONS VARYING	PAGES
Effects of Fin Size and 30 Degree Dihedral - Longitudinal Characteristics	(A)	Configuration	1-30
Effects of Fin Size and 30 Degree Dihedral - Lateral-Directional Characteristics	(B)	Alpha & Configuration	31-38
Effects of Fin Size and 0 Degree Dihedral - Longitudinal Characteristics	(A)	Configuration	39-48
Effects of Fin Size and 0 Degree Dihedral - Lateral-Directional Characteristics	(B)	Configuration	49-52
Effects of Fin Size and 45 Degree Dihedral - Longitudinal Characteristics	(A)	Configuration	53-62
Effects of Fin Size and 45 Degree Dihedral - Lateral-Directional Characteristics	(B)	Alpha & Configuration	63-66
Effects of Transition Strip - 0.6 Mach Number	(C)	Configuration	67-72
N1BL - Effects of Mach Number - Longitudinal Characteristics	(D)	Mach Number	73-94
Effects of Mach Number on Lateral-Directional Characteristics	(B)	Mach Number	95-98
Effects of Mach Number on Lateral-Directional Characteristics	(B)	Mach Number	99-102
Effect of Dihedral - N1BLF6 - Longitudinal Characteristics	(A)	Dihedral	103-142
Effect of Dihedral - N1BLF6 - Lateral-Directional Characteristics	(B)	Dihedral & Alphas	143-150

SUMMARY DATA PLOT INDEX
(Continued)

TITLE	PLOTTED COEFFICIENTS SCHEDULE	CONDITIONS VARYING	PAGES
Effects of Mach Number - N1B1F6 - Lateral-Directional Characteristics-Alpha = 30	(E)	Mach Number	151-158
Effects of Mach Number - N1B1F6 - Lateral-Directional Characteristics-Alpha = 50	(E)	Mach Number	159-166
Effects of Mach Number - N1B1F6 - Longitudinal Characteristics	(E)	Mach Number	167-177
Effects of Mach Number - N1B1F2 - Lateral-Directional Characteristics-Alpha = 30	(B)	Mach Number	178-181
Effects of Mach Number - N2B2 - Longitudinal Characteristics	(D)	Mach Number	182-192
Effects of Dihedral - N2B2F7 - Longitudinal Characteristics	(A)	Dihedral	193-212
Effects of Dihedral - N2B2F7 - Lateral-Directional Characteristics	(B)	Dihedral	213-220
Effects of Mach Number - N2B2F7 - Longitudinal Characteristics	(D)	Mach Number	221-231
Effects of Mach Number - N2B2F7 - Lateral-Directional Characteristics	(E)	Mach Number	232-239

Note: See next page for Plotted Coefficients Schedule.

SUMMARY DATA PLOT INDEX
(Continued)

PLOTTED COEFFICIENTS SCHEDULE:

- (A) CL, CD, L/D, CA, CN, CLM, CN/A, CLM/A, XAC vs. ALPHA
CN vs. CLM
- (B) CY, CYN & CBL vs. BETA
CYN vs. CY
- (C) CN, CLM, CA, CY, CYN & CBL vs. ALPHA
- (D) CL, CD, L/D, CA, CAB, CN, CLM, CN/A, CLM/A & XAC vs. ALPHA
CN vs. CLM
- (E) CY, CYN, & CBL vs. BETA
CYN vs. CY
 $D(CY)/DB$, $D(CYN)/DB$, $D(CBL)/DB$ & XAC vs. MACH

Notes:

1. Positive directions of force coefficients moment coefficients, and angles are indicated by arrows.
2. For clarity, origins of wind and stability axes have been displaced from the center of gravity.

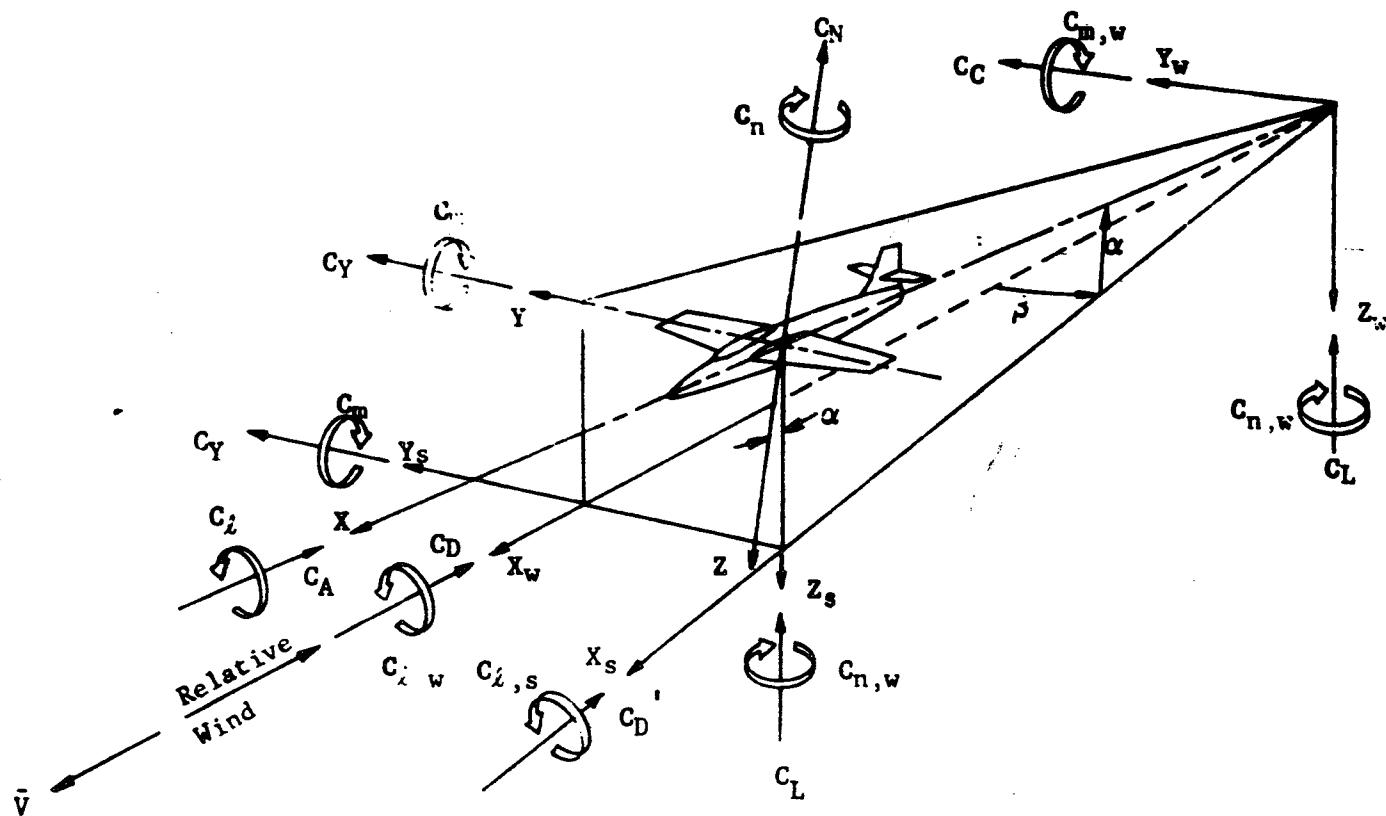


Figure 1. Axis systems, showing direction and sense of force and moment coefficients, angle of attack, and sideslip angle



Figure 2. MSFC Pressure Fed Booster Model Installed
in MSFC Trisonic Wind Tunnel

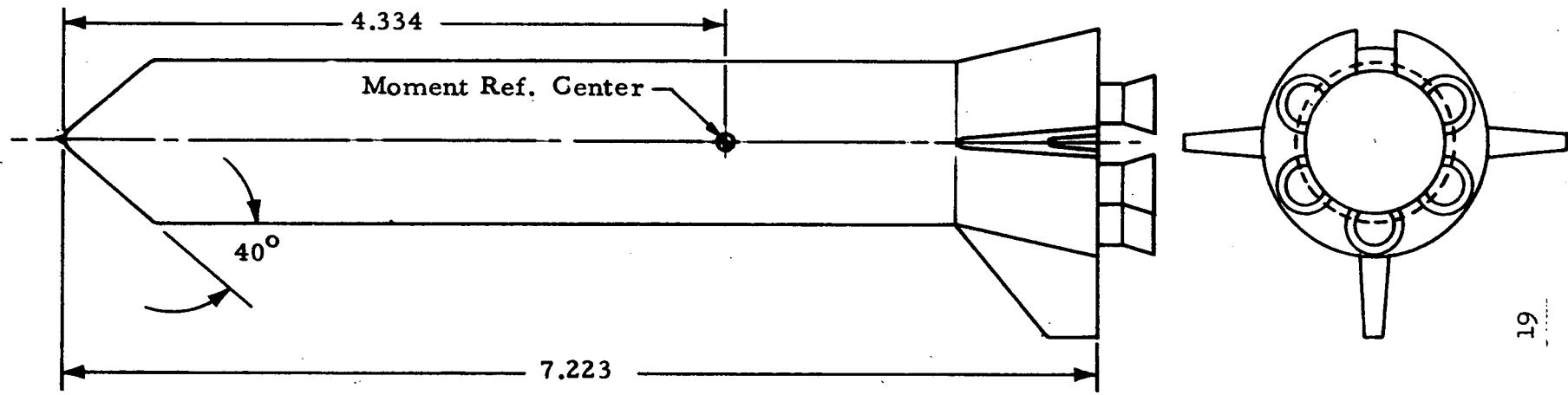


Figure 3. MSFC Pressure Fed Booster
Moment Reference Center Location

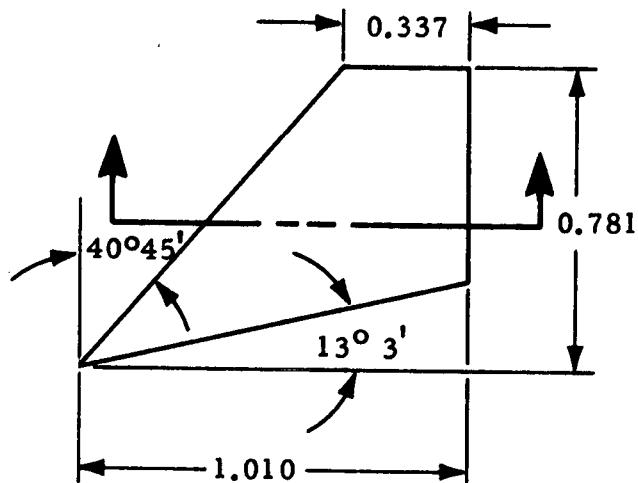
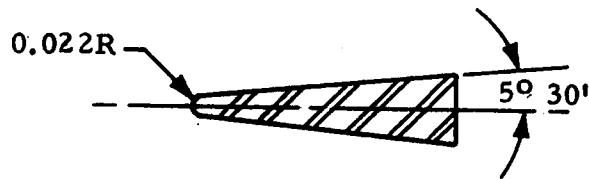


Figure 4 - Fins F2, F3

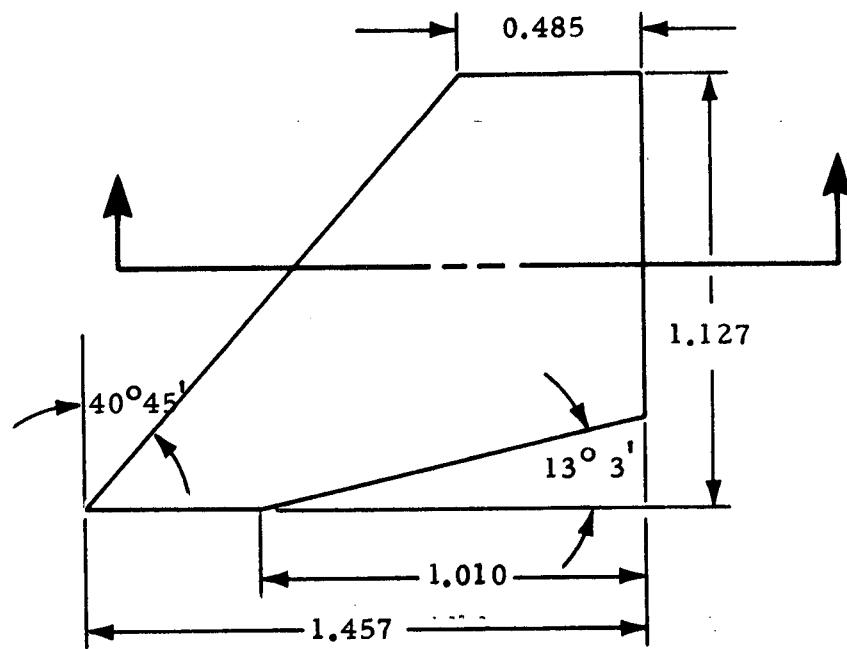
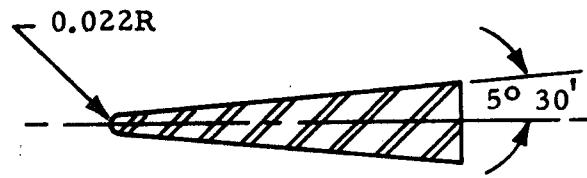
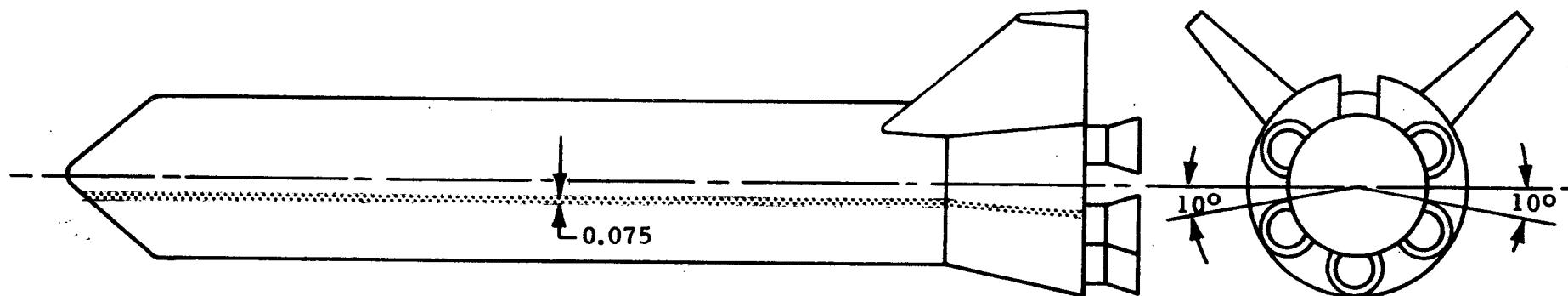


Figure 5 - Fins F4, F6



Transition strip No. 120 carborundum grit

22

Figure. 6 - Transition Strip

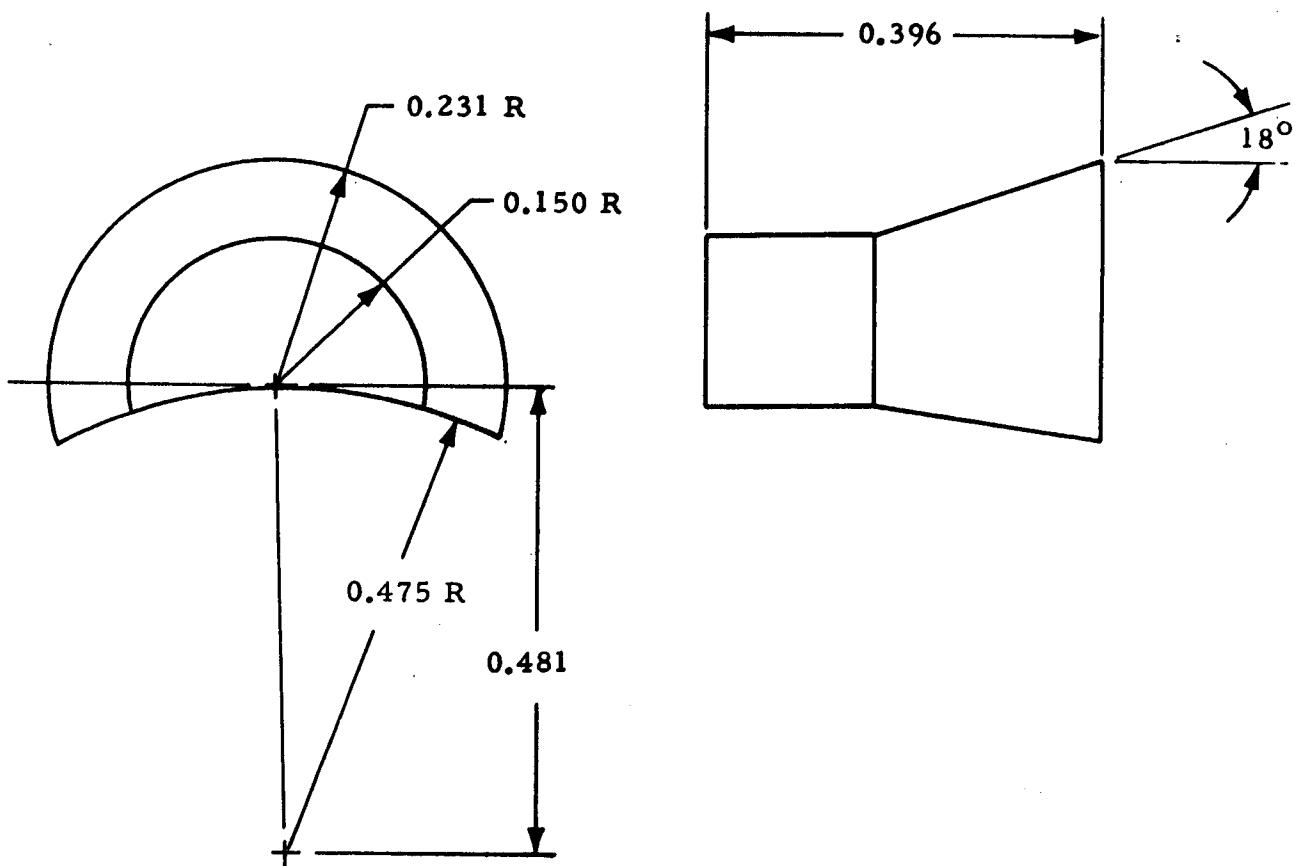


Figure. 7 - Rocket Engines for NIBI



NASA-MSFC
S&E-Aero-AE

Figure 8. MSFC Pressure Fed Booster Configuration X
0.003366 Scale Model

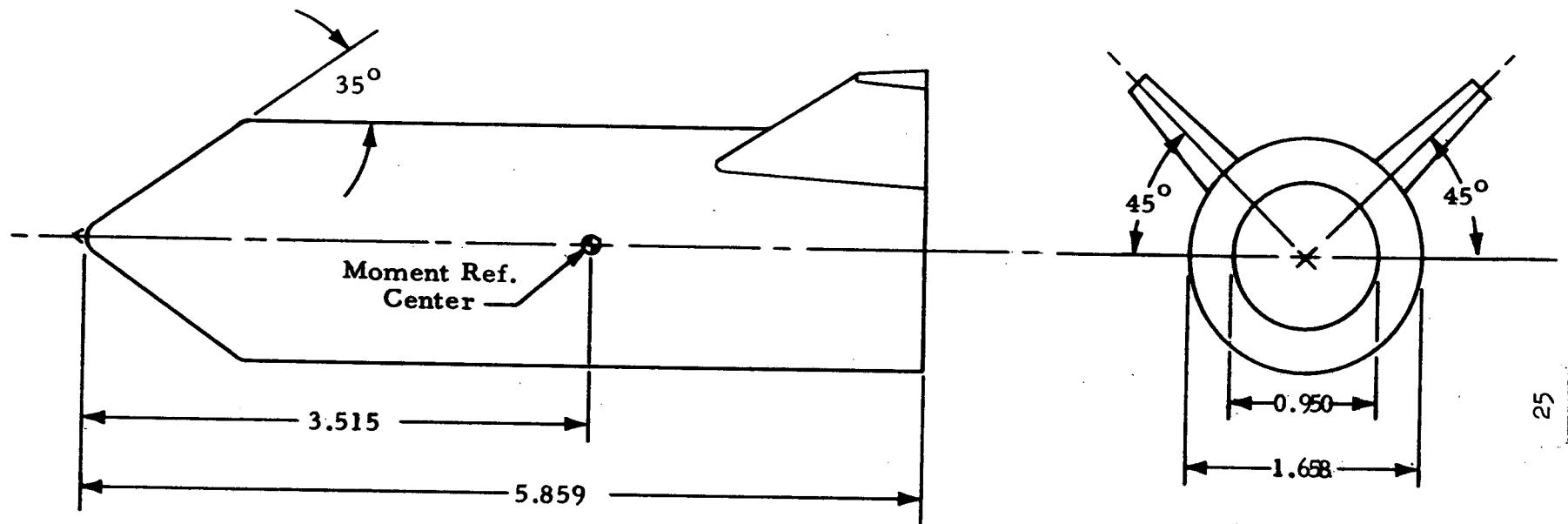


Figure 9 - MSFC Pressure Fed Booster Configuration X
Moment Reference Center Location

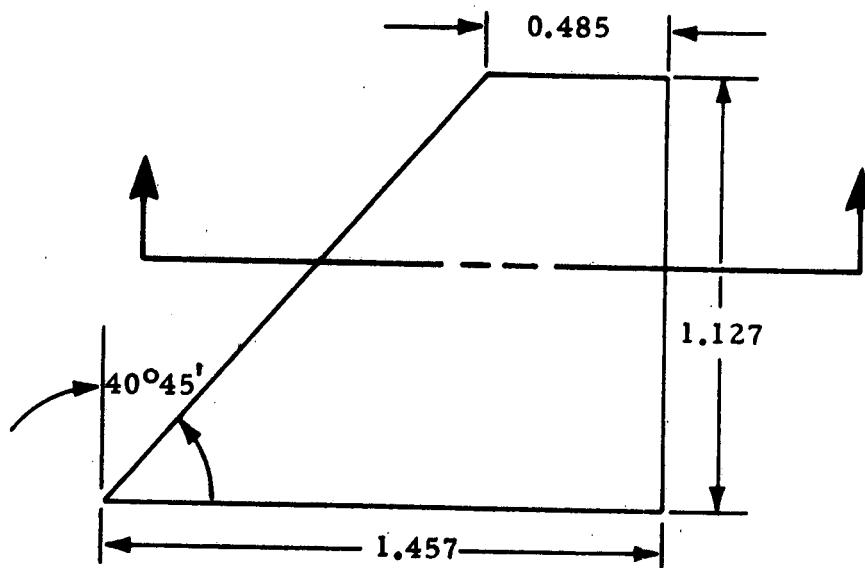
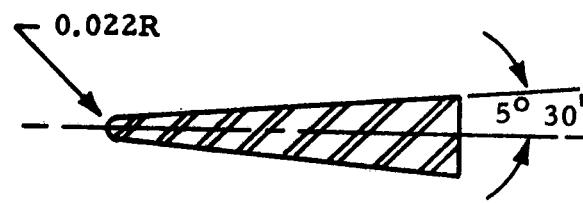
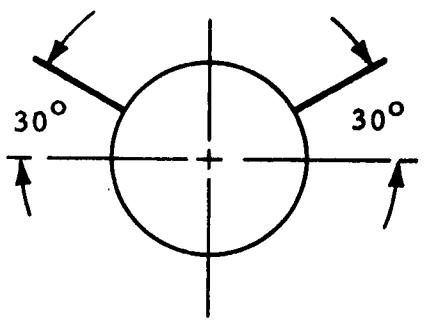
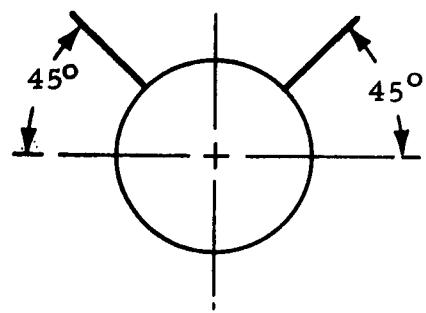


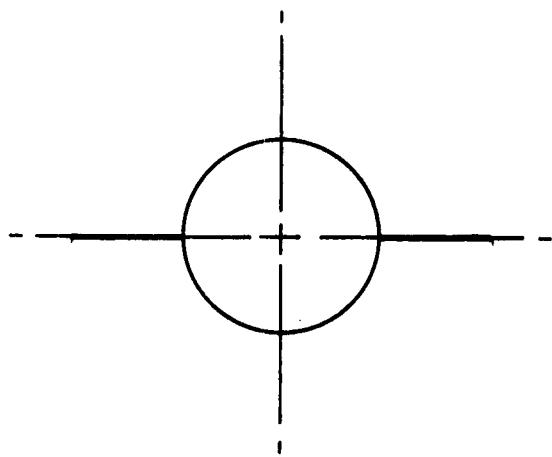
Figure 10. Fins F7



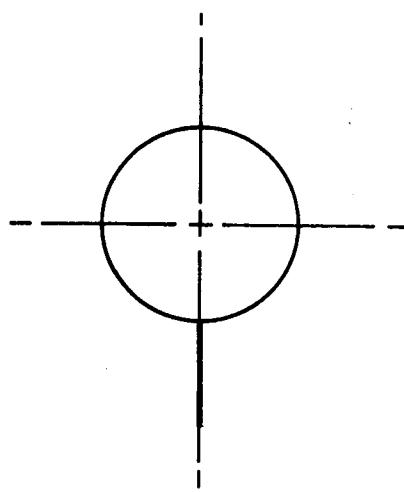
F2, F6, F7 30° Dihedral



F2, F6, F7 45° Dihedral



F2, F6, F7 0° Dihedral



F3, F4 Fin Vertical

Figure 11. Fin Positions

TABLE III

MODEL COMPONENT: BODY - N1B1

GENERAL DESCRIPTION: MSFC Pressure-Fed Booster Body with 40 degree conical nose, cylindrical body, and 13 degree aft flare.

DRAWING NUMBER: _____

DIMENSIONS:

	<u>FULL-SCALE</u>	<u>MODEL SCALE</u>
Length	<u>178.8 ft.</u>	<u>7.223 in.</u>
Max. Width	<u>38.6 ft.</u>	<u>1.558 in.</u>
Max. Depth	<u>38.6 ft.</u>	<u>1.558 in.</u>
Fineness Ratio	_____	_____
Area	_____	_____
Cross-Sectional	<u>572 ft²</u>	<u>0.933 in²</u>
Planform	_____	_____
Wetted	_____	_____
Base	<u>1168 ft²</u>	<u>1.906 in²</u>
Body Diameter	<u>27 ft.</u>	<u>1.091 in.</u>
Base Diameter	<u>38.6 ft.</u>	<u>1.558 in.</u>
Base Flare Angle, Degrees	<u>13.05</u>	<u>13.05</u>
Conical Nose Angle, Degrees	<u>40</u>	<u>40</u>

TABLE IV

MODEL COMPONENT: FINS - F2, F3

GENERAL DESCRIPTION: Fins for MSFC Pressure Fed Booster

DRAWING NUMBER: _____

<u>DIMENSIONS:</u>	<u>FULL-SCALE</u>	<u>MODEL SCALE</u>
Area	<u>250 ft.²</u>	<u>0.408 in.²</u>
Span (equivalent)	_____	_____
Inb'd equivalent chord	_____	_____
Outb'd equivalent chord	<u>8.34 ft.</u>	<u>0.337 in.</u>
Ratio movable surface chord/ total surface chord	•	•
At Inb'd equiv. chord	_____	_____
At Outb'd equiv. chord	_____	_____
Sweep Back Angles, degrees		
Leading Edge	<u>40.75</u>	<u>40.75</u>
Tailing Edge	<u>0.0</u>	<u>0.0</u>
Hingeline	_____	_____
Area Moment (Normal to hinge line)	_____	_____

TABLE V

MODEL COMPONENT: FINS - F4, F6GENERAL DESCRIPTION: Fins for MSFC Pressure Fed Booster

DRAWING NUMBER: _____DIMENSIONS:

	<u>FULL-SCALE</u>	<u>MODEL SCALE</u>
Area	<u>600 ft.²</u>	<u>0.979 in.²</u>
Span (equivalent)	_____	_____
Inb'd equivalent chord	_____	_____
Outb'd equivalent chord	<u>12.0 ft.</u>	<u>0.485 in.</u>
Ratio movable surface chord/ total surface chord	_____	_____
At Inb'd equiv. chord	_____	_____
At Outb'd equiv. chord	_____	_____
Sweep Back Angles, degrees		
Leading Edge	<u>40.75</u>	<u>40.75</u>
Tailing Edge	<u>0.0</u>	<u>0.0</u>
Hingeline	_____	_____
Area Moment (Normal to hinge line)	_____	_____

TABLE VI

MODEL COMPONENT: BODY - N2B2

GENERAL DESCRIPTION: MSFC Pressure-Fed Booster body configuration X
with 35 degree conical nose and cylindrical body.

DRAWING NUMBER: _____

DIMENSIONS:

	<u>FULL-SCALE</u>	<u>MODEL SCALE</u>
Length	<u>145 ft.</u>	<u>5.859 in.</u>
Max. Width	<u>41 ft.</u>	<u>1.658 in.</u>
Max. Depth	<u>41 ft.</u>	<u>1.658 in.</u>
Fineness Ratio	_____	_____
Area		
Max. Cross-Sectional	<u>1320 ft²</u>	<u>2.159 in²</u>
Planform	_____	_____
Wetted	_____	_____
Base	<u>1320 ft²</u>	<u>2.159 in²</u>
Body Diameter	<u>41 ft.</u>	<u>1.658 in.</u>
Conical Nose Angle, Degrees	<u>35</u>	<u>35</u>

MODEL COMPONENT: FINS - F7

GENERAL DESCRIPTION: Fins for MSFC Pressure Fed Booster Configuration X

DRAWING NUMBER: _____

DIMENSIONS:

	<u>FULL-SCALE</u>	<u>MODEL SCALE</u>
Area	<u>672 ft²</u>	<u>1.100 in²</u>
Span (equivalent)	_____	_____
Inb'd equivalent chord	_____	_____
Outb'd equivalent chord	<u>12.0 ft.</u>	<u>0.485 in.</u>
Ratio movable surface chord/ total surface chord	_____	_____
At Inb'd equiv. chord	_____	_____
At Outb'd equiv. chord	_____	_____
Sweep Back Angles, degrees	_____	_____
Leading Edge	<u>40.75</u>	<u>40.75</u>
Tailing Edge	<u>0.0</u>	<u>0.0</u>
Hingeline	_____	_____
Area Moment (Normal to hinge line)	_____	_____

NOMENCLATURE

(General)

<u>SYMBOL</u>	<u>SADSAC SYMBOL</u>	<u>DEFINITION</u>
α	ALPHA	angle of attack, angle between the projection of the wind X_w -axis on the body X, Z-plane and the body X-axis; degrees
β	BETA	sideslip angle, angle between the wind X_w -axis and the projection of this axis on the body X-Z-plane; degrees
ψ	PSI	yaw angle, angle of rotation about the body Z-axis, positive when the positive X-axis is rotated toward the positive Y-axis; degrees
ϕ	PHI	roll angle, angle of rotation about the body X-axis, positive when the positive Y-axis is rotated toward the positive Z-axis; degrees
ρ		air density; kg/m^3 , slugs/ ft^3
a		speed of sound; m/sec , ft/sec
v		speed of vehicle relative to surrounding atmosphere; m/sec , ft/sec
q	$Q(\text{PSI})$ $Q(\text{PSF})$	dynamic pressure; $1/2\rho v^2$, psi, psf
M	MACH	Mach number; v/a
RN/L	RN/L	Reynolds number per unit length; million/ ft
p		static pressure; psi
P		total pressure; psi
C_p	CP	pressure coefficient; $(p-p_\infty)/q$

NOMENCLATURE (Continued)

Reference & C. G. Definitions

<u>SYMBOL</u>	<u>SADSAC SYMBOL</u>	<u>DEFINITION</u>
S		wing area; m^2 , ft^2
S	SREF	reference area; m^2 , ft^2
c		wing mean aerodynamic chord or reference chord; m, ft, in (see l_{ref} or LREF)
l_{ref}	LREF	reference length; m, ft, in.; (see c)
bref	BREF	wing span or reference span; m, ft, in
A_b		base area; m^2 , ft^2 , in ²
c. g.		center of gravity
MRP	MRP	abbreviation for moment reference point
	XMRP	abbreviation for moment reference point on X-axis
	YMRP	abbreviation for moment reference point on Y-axis
	ZMRP	abbreviation for moment reference point on Z-axis

NOMENCLATURE (Continued)

Axis System General

SYMBOL

DEFINITION

F	force; F, lbs
M	moment; M, in-lb

Subscript

Definition

N	normal force
A	axial force
L	lift force
D	drag force
Y	force or moment about the Y axis
Z	moment about the Z axis
X	moment about the X axis
s	stability axis system
w	wind axis system
ref	reference conditions
∞	free stream conditions
t	total conditions
b	base

NOMENCLATURE (Continued)
Body & Stability Axis System

<u>SYMBOL</u>	<u>SADSAC SYMBOL</u>	<u>DEFINITION</u>
<u>Body Axis System</u>		
C_N	CN	normal force coefficient; F_N/qS
C_A	CA	axial force coefficient; F_A/qS
C_{A_b}	CAB	base axial force coefficient; $[-1] \left[(P_b - P_\infty)/q \right] (A_b/S)$
C_{A_f}	CAF	forebody axial force coefficient; $C_A - C_{A_b}$
C_n	CYN	yawing moment coefficient; $M_Z/qS b_{ref}$
C_l	CBL	rolling moment coefficient; $M_X/qS b_{ref}$
<u>Common to Both Axis Systems</u>		
C_m	CLM	pitching moment coefficient; $M_Y/qS l_{ref}$
C_y	CY	side force coefficient; F_Y/qS
<u>Stability Axis System</u>		
C_L	CL	lift force coefficient; F_L/qS
C_D	CD	drag force coefficient; F_D/qS
C_{D_b}	CDB	base drag coefficient
C_{D_f}	CDF	forebody drag coefficient; $C_D - C_{D_b}$
C_n	CLN	yawing moment coefficient; $M_{Z,s}/qS b_{ref}$
C_l	CSL	rolling moment coefficient; $M_{X,s}/qS b_{ref}$
L/D	L/D	lift-to-drag ratio; C_L/C_D
L/D_f	L/DF	lift to forebody drag ratio; C_L/C_{D_f}

NOMENCLATURE (Continued)

Surface Definitions

<u>SYMBOL</u>	<u>SADSAC SYMBOL</u>	<u>DEFINITION</u>
it	HORIZT	horizontal tail incidence; positive when trailing edge down; degrees
δ		symmetrical surface deflection angle; degrees; positive deflections are:
	AILRDN	aileron - total aileron deflection; (left aileron - right aileron)/2
	CANARD	canard - trailing edge down
	ELEVON	elevon - trailing edge down
	ELEVTR	elevator - trailing edge down
	FLAP	flap - trailing edge down
	RUDDER	rudder - trailing edge to the left
	SPOILR	spoiler - trailing edge down
	TAB	tab - trailing edge down with respect to control surface
δ		antisymmetrical surface deflection angle, degrees; positive trailing edge down: left aileron - trailing edge down right aileron - trailing edge down left elevon - trailing edge down right elevon - trailing edge down left spoiler - trailing edge down right spoiler - trailing edge down
	AIL-L	
	AIL-R	
	ELVN-L	
	ELVN-R	
	SPLR-L	
	SPLR-R	

<u>SURFACE SUBSCRIPTS</u>	<u>DEFINITION</u>
a	aileron
b	base
c	canard
e	elevator or elevon
f	flap
r	rudder or ruddervator
s	spoiler
t	tail

ADDITIONS TO NOMENCLATURE
FOR
MSFC 518

<u>SYMBOL</u>	<u>SADSAC SYMBOL</u>	<u>DEFINITION</u>
C_N _{local}	CN/A	normal force coefficient local slope; per degree.
C_m _{local}	CIM/A	pitching moment coefficient local slope, per degree.
a.c. _{local}	XAC	local longitudinal center of pressure, local pitching moment coefficient slope divided by the local normal force coefficient slope, XAC = (CN/A)/CIM/A.
$C_y\beta$	D(CY)/DB	Derivative of slide force coefficient with respect to Beta (Beta = $\pm 5^\circ$); per degree.
$C_n\beta$	D(CYN)/DB	Derivative of yawing moment coefficient with respect to Beta (Beta = $\pm 5^\circ$); per degree.
$C_l\beta$	D(CBL)/DB	Derivative of rolling moment coefficient with respect to Beta (Beta = $\pm 5^\circ$); per degree.
a.c. _{local}	YAC	local lateral center of pressure. Derivative of yawing moment coefficient with respect to side force coefficient.

TABULATED DATA LISTING

A tabulated data listing, consisting of all aero data sets, both original and those created in arriving at the plotted material to be presented subsequently, is available as an addendum to this report. The tabular listing is made up in two sections:

- (a) a brief summary list of all data sets containing the identifier, the descriptor, and the resident dependent variables.
- (b) a full list of all datasets containing all resident or selected aerodynamic coefficients of the data sets as well as the above mentioned information.

The listing is currently sent on limited distribution to the following organizations:

NASA AMES	Mr. V. Stevens
NASA MSFC	Mr. J. Weaver

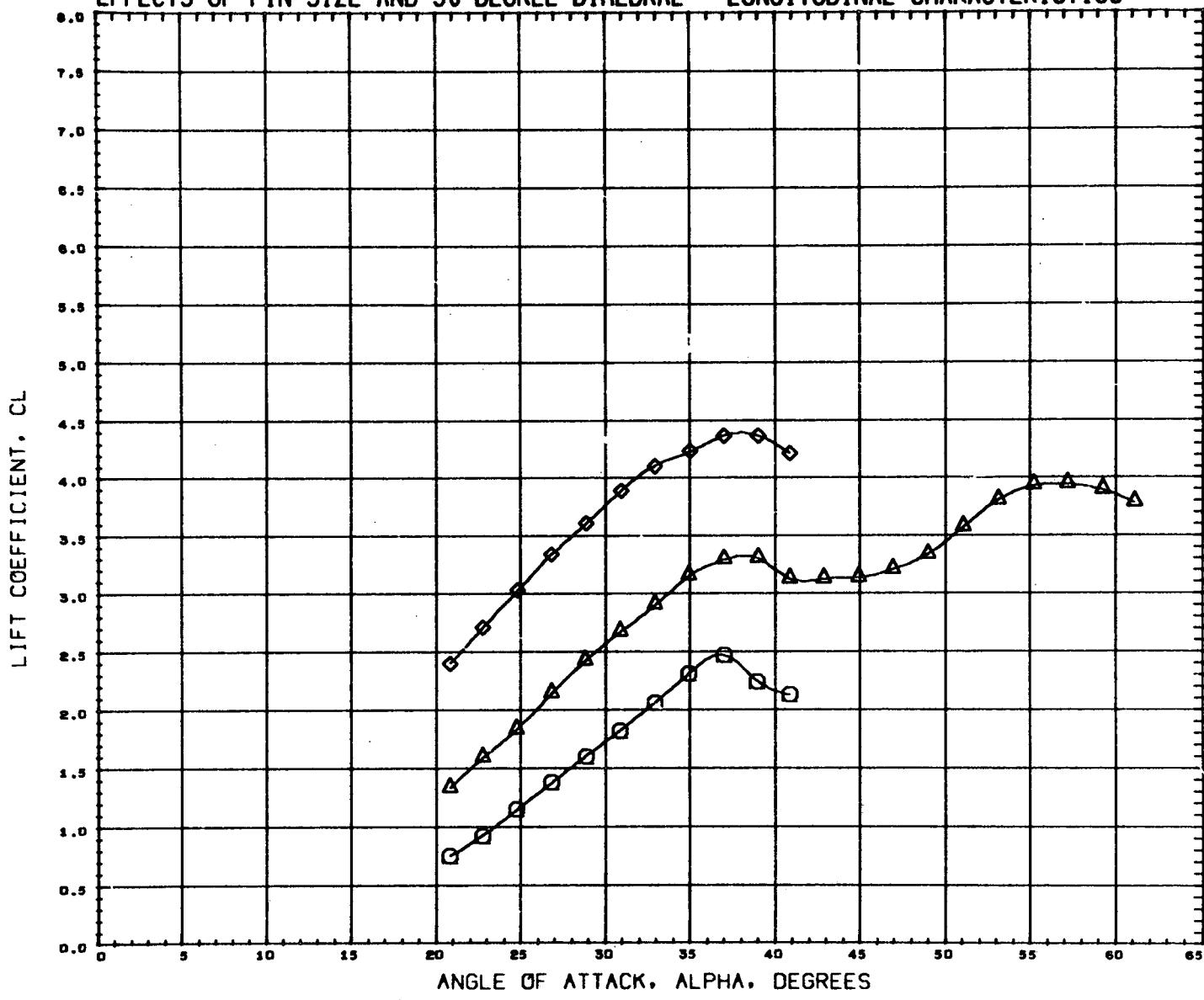
If copies of this listing are desired, please contact the above or the cognizant SADSAC personnel who, for this data, is:

Mr. W. R. Morgan
Department 2780
Chrysler Corporation Space Division
New Orleans, La. 70129

(504) 255-2304

P L O T T E D D A T A

EFFECTS OF FIN SIZE AND 30 DEGREE DIHEDRAL - LONGITUDINAL CHARACTERISTICS



DATA SET SYMBOL CONFIGURATION DESCRIPTION

(K54901) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1
 (K54903) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F2
 (K54907) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6

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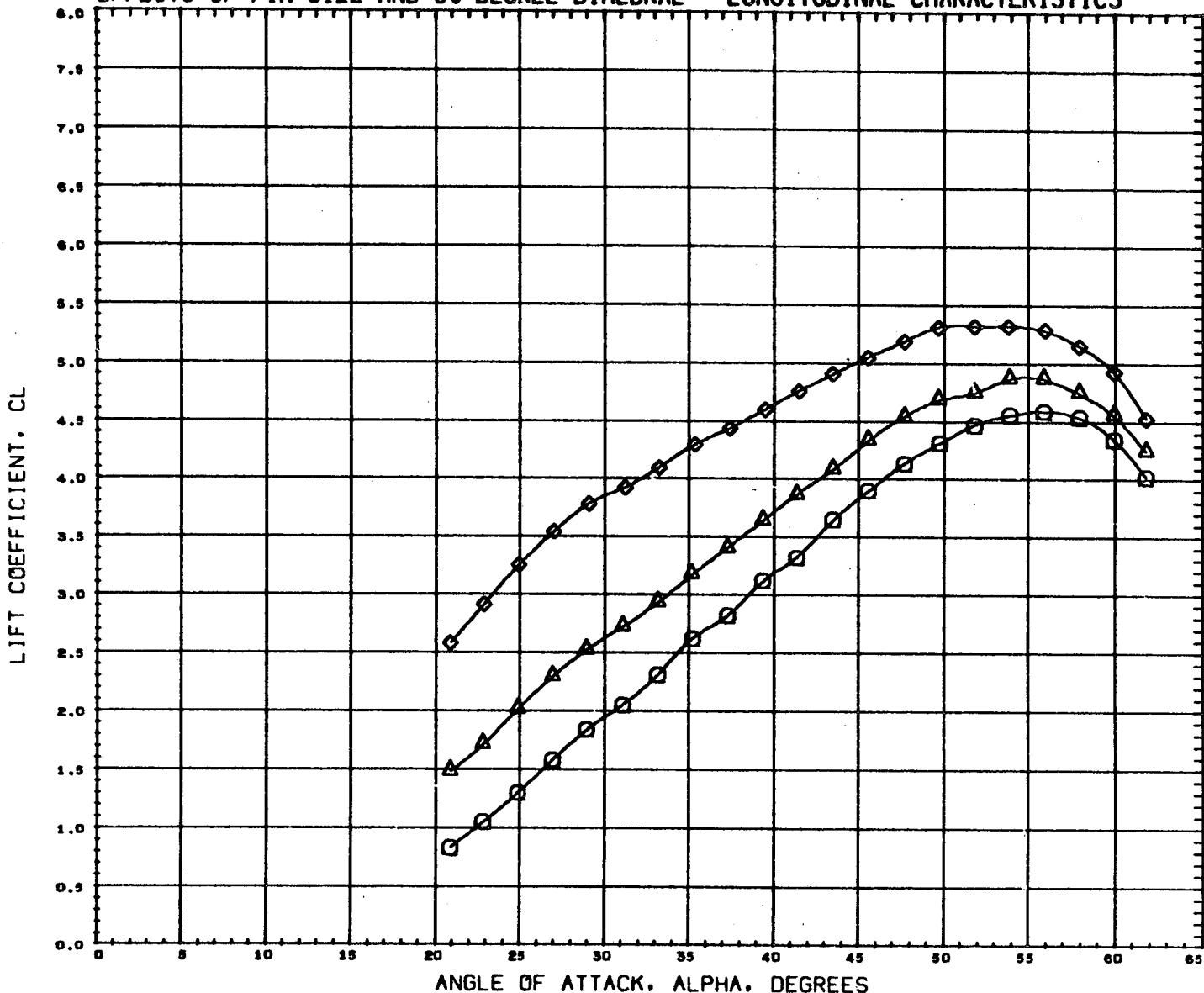
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MACH 0.600

PAGE 1

EFFECTS OF FIN SIZE AND 30 DEGREE DIHEDRAL - LONGITUDINAL CHARACTERISTICS



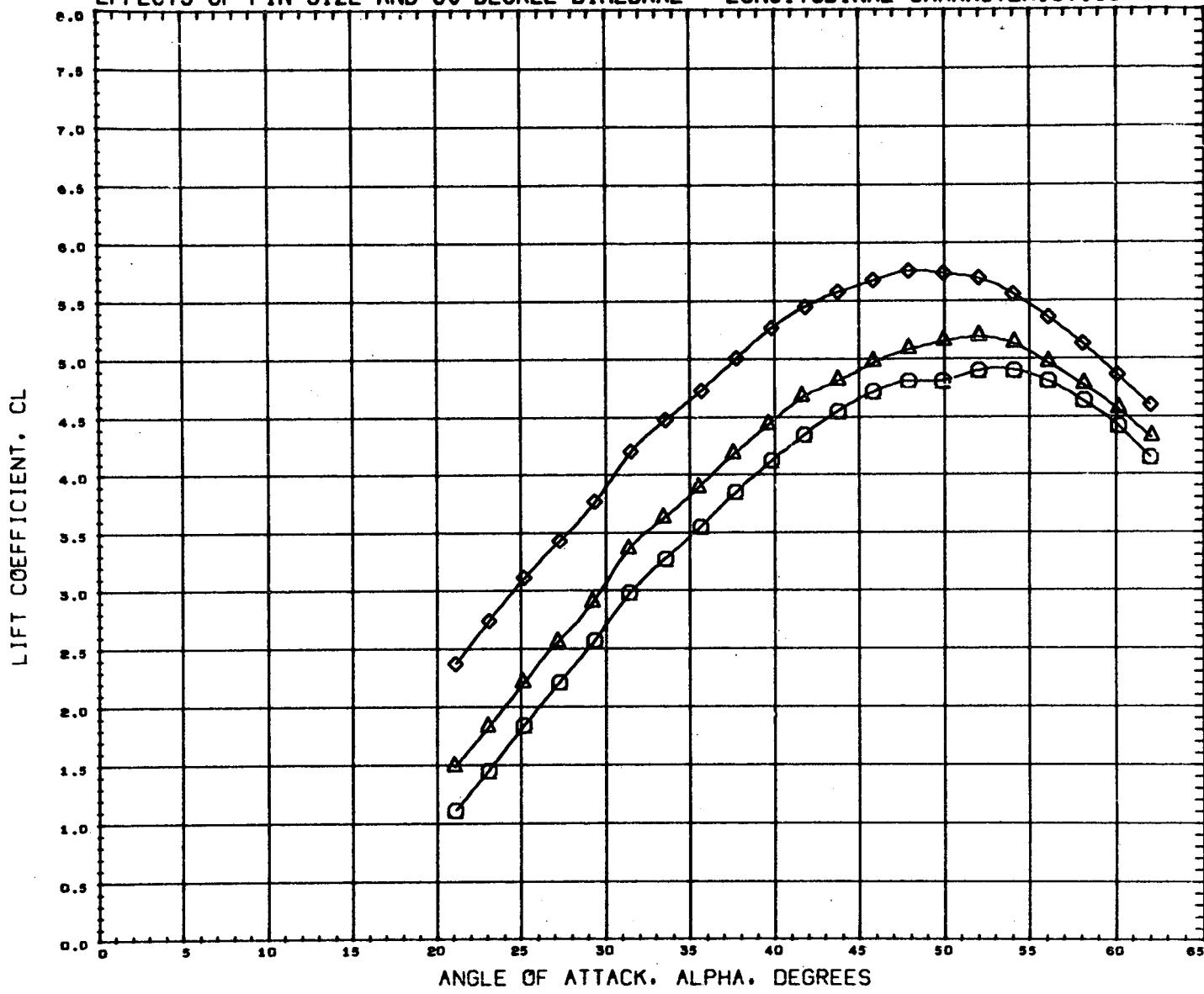
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MACH 0.899

EFFECTS OF FIN SIZE AND 30 DEGREE DIHEDRAL - LONGITUDINAL CHARACTERISTICS



DATA SET SYMBOL CONFIGURATION DESCRIPTION

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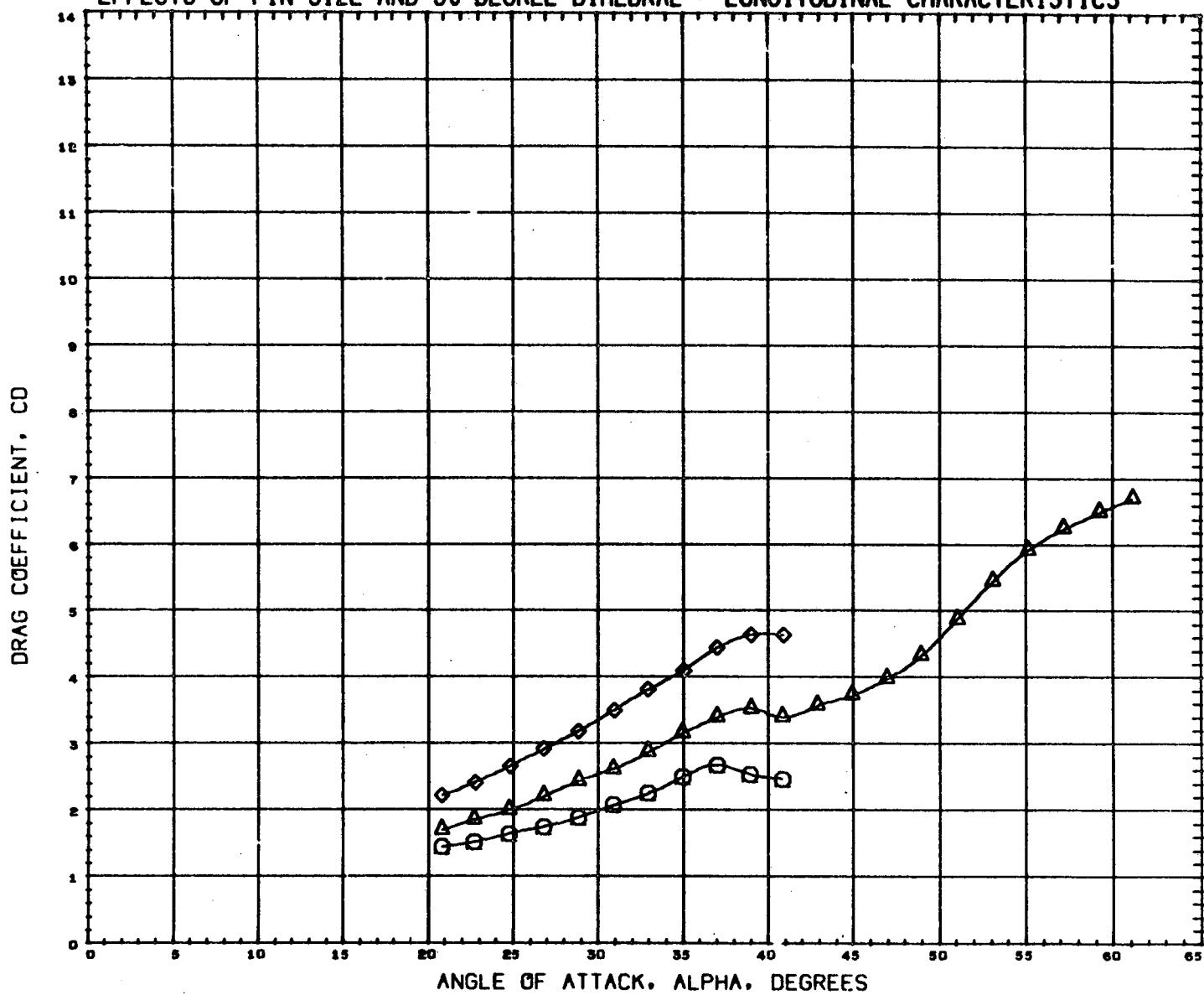
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MACH 1.200

PAGE 3

EFFECTS OF FIN SIZE AND 30 DEGREE DIHEDRAL - LONGITUDINAL CHARACTERISTICS



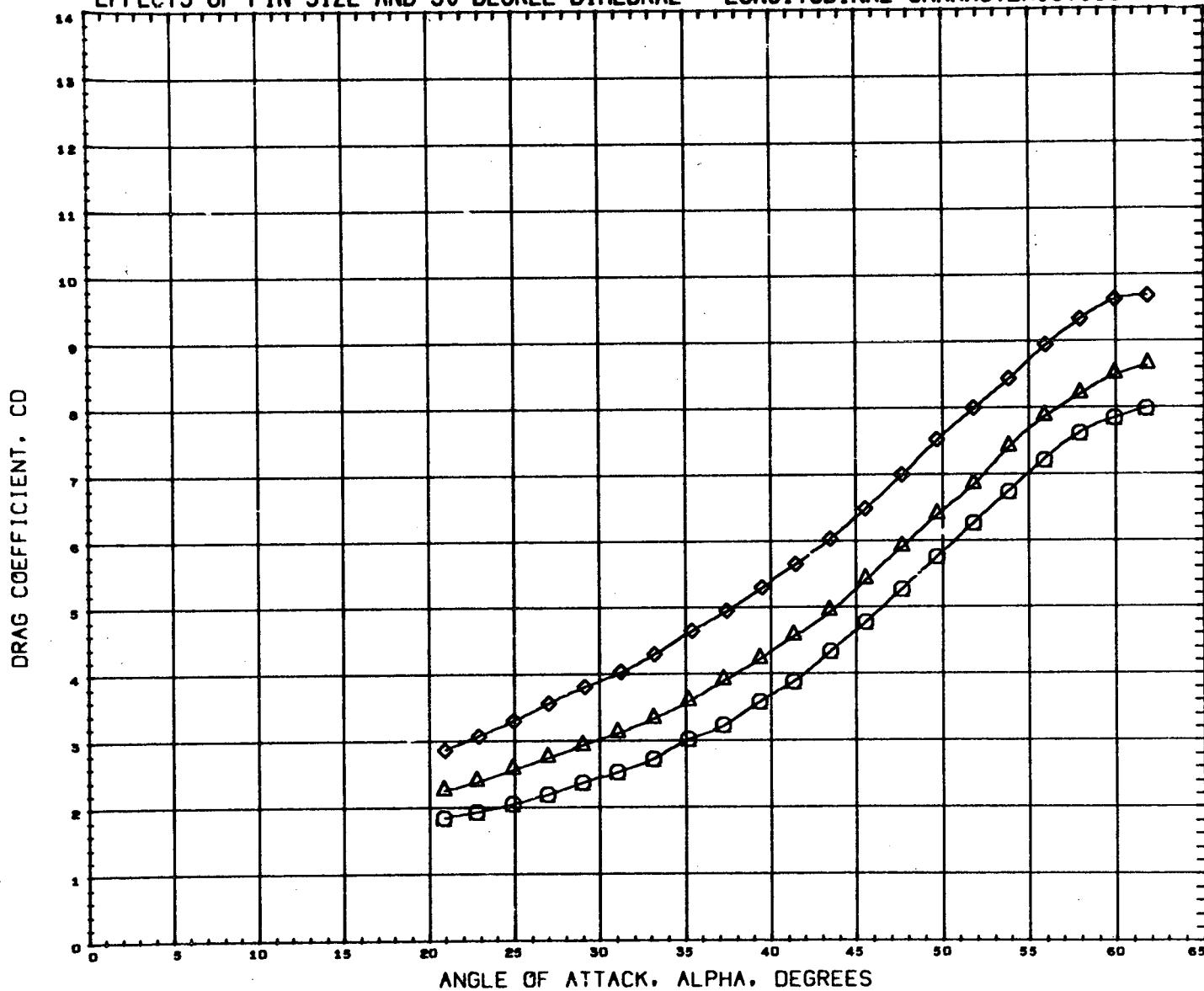
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MACH 0.600

EFFECTS OF FIN SIZE AND 30 DEGREE DIHEDRAL - LONGITUDINAL CHARACTERISTICS



DATA SET SYMBOL CONFIGURATION DESCRIPTION

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(K54903)	△	MSFC 518	MSFC PRESSURE FED BOOSTER	N1B1F2
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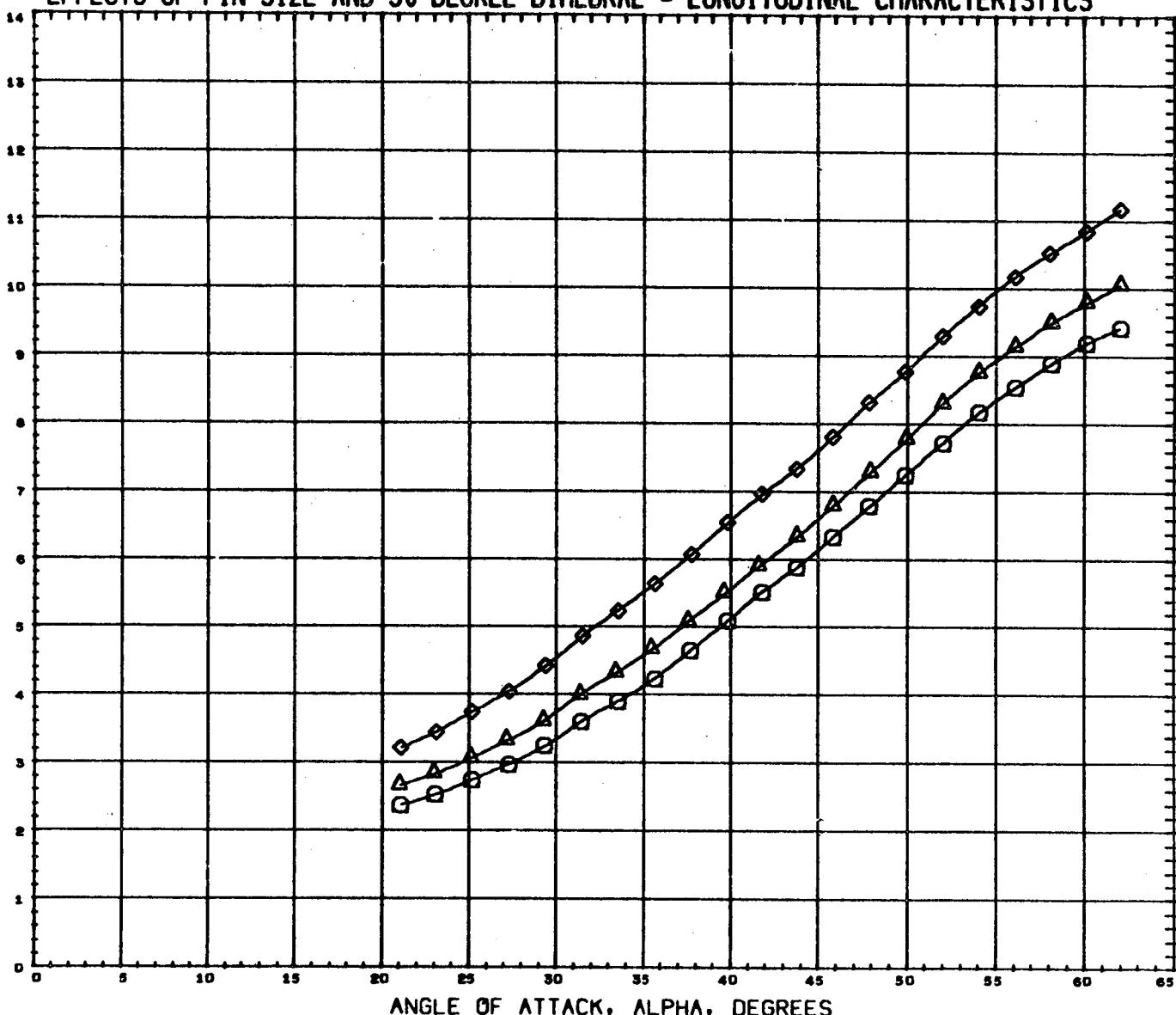
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SCALE	0.0034	

MACH 0.899

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EFFECTS OF FIN SIZE AND 30 DEGREE DIHEDRAL - LONGITUDINAL CHARACTERISTICS

DRA G COEFFICIENT, CD



ANGLE OF ATTACK, ALPHA, DEGREES

DATA SET SYMBOL CONFIGURATION DESCRIPTION

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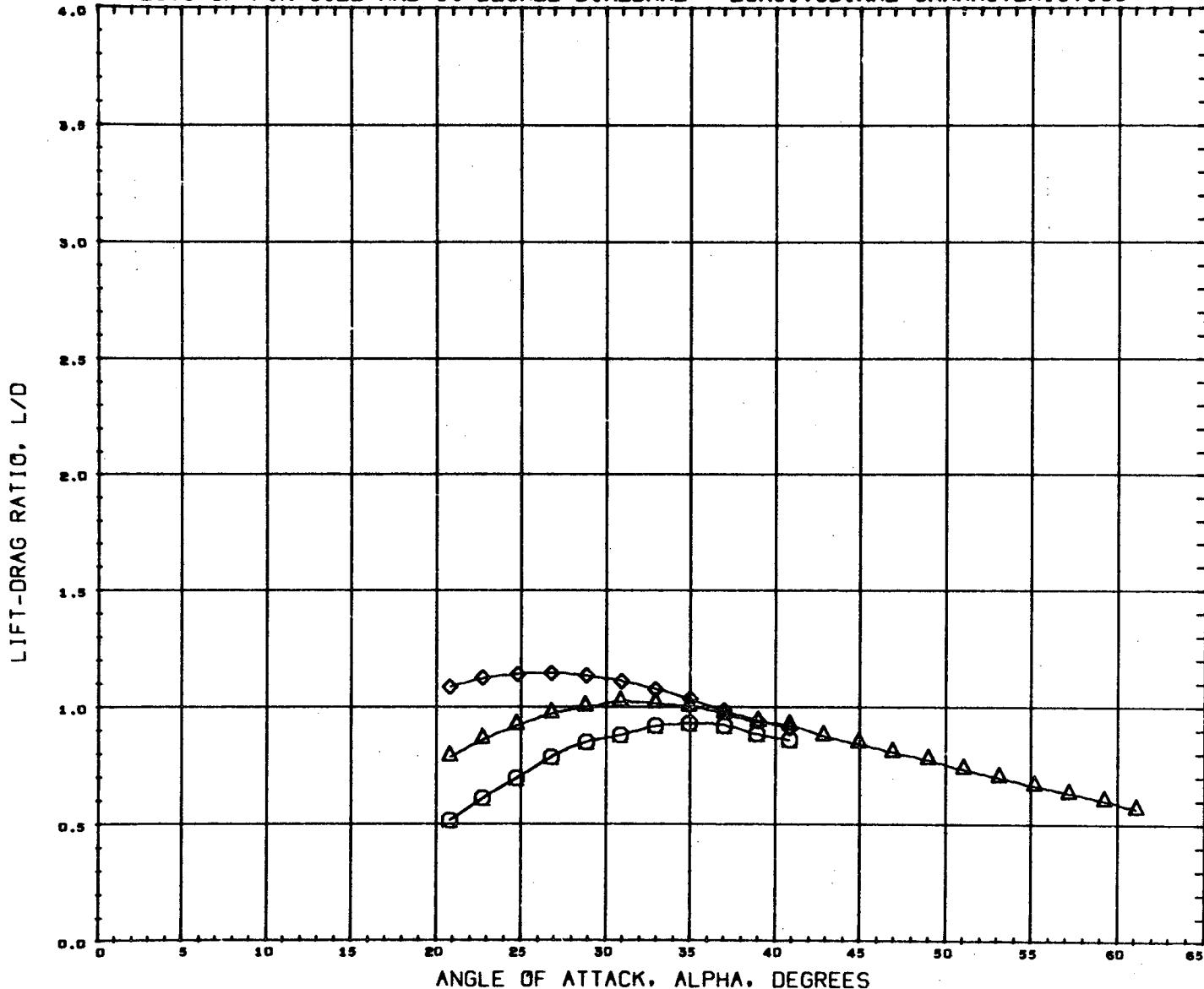
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MACH 1.200

PAGE

6

EFFECTS OF FIN SIZE AND 30 DEGREE DIHEDRAL - LONGITUDINAL CHARACTERISTICS



DATA SET SYMBOL CONFIGURATION DESCRIPTION

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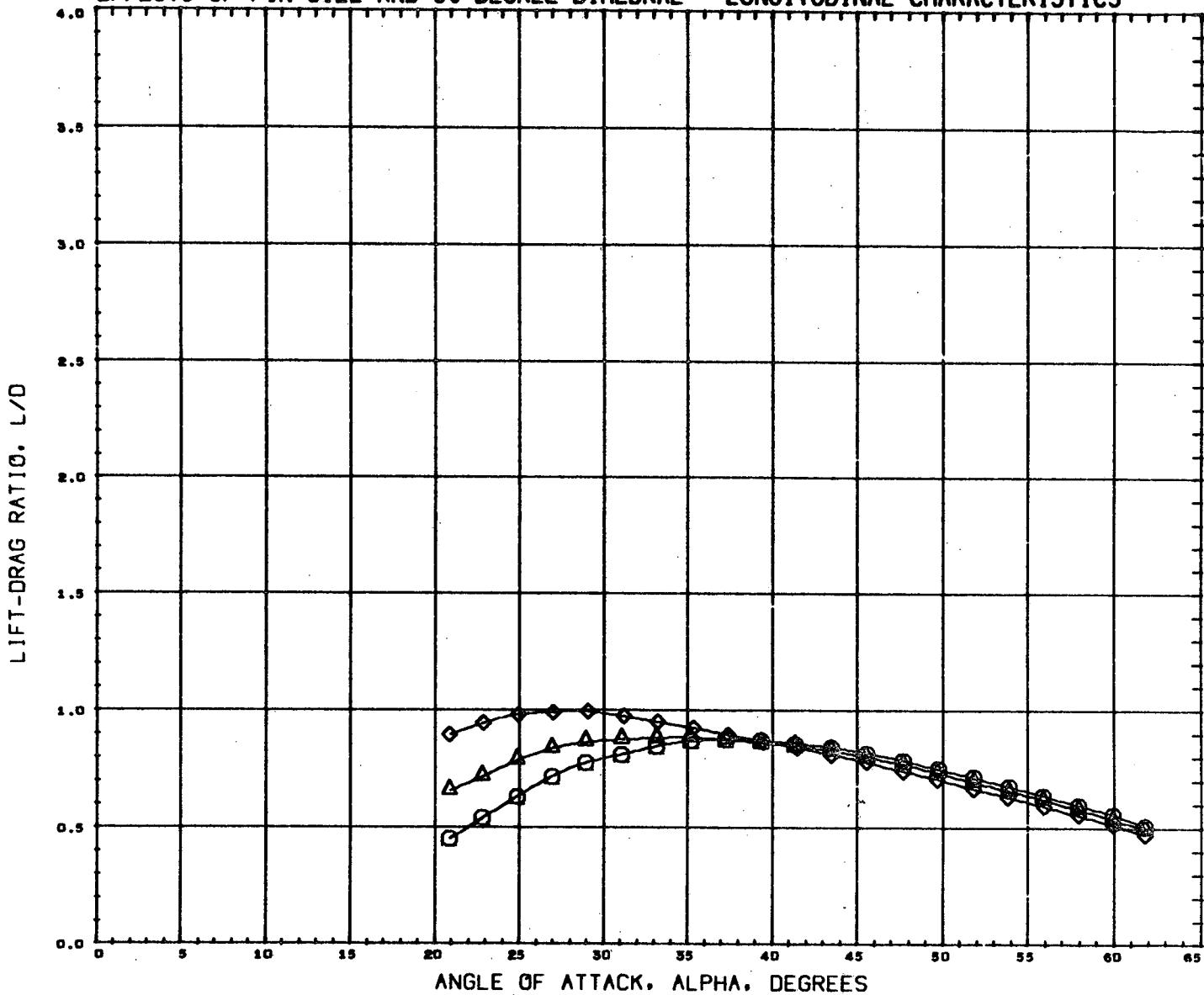
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EFFECTS OF FIN SIZE AND 30 DEGREE DIHEDRAL - LONGITUDINAL CHARACTERISTICS



DATA SET SYMBOL CONFIGURATION DESCRIPTION

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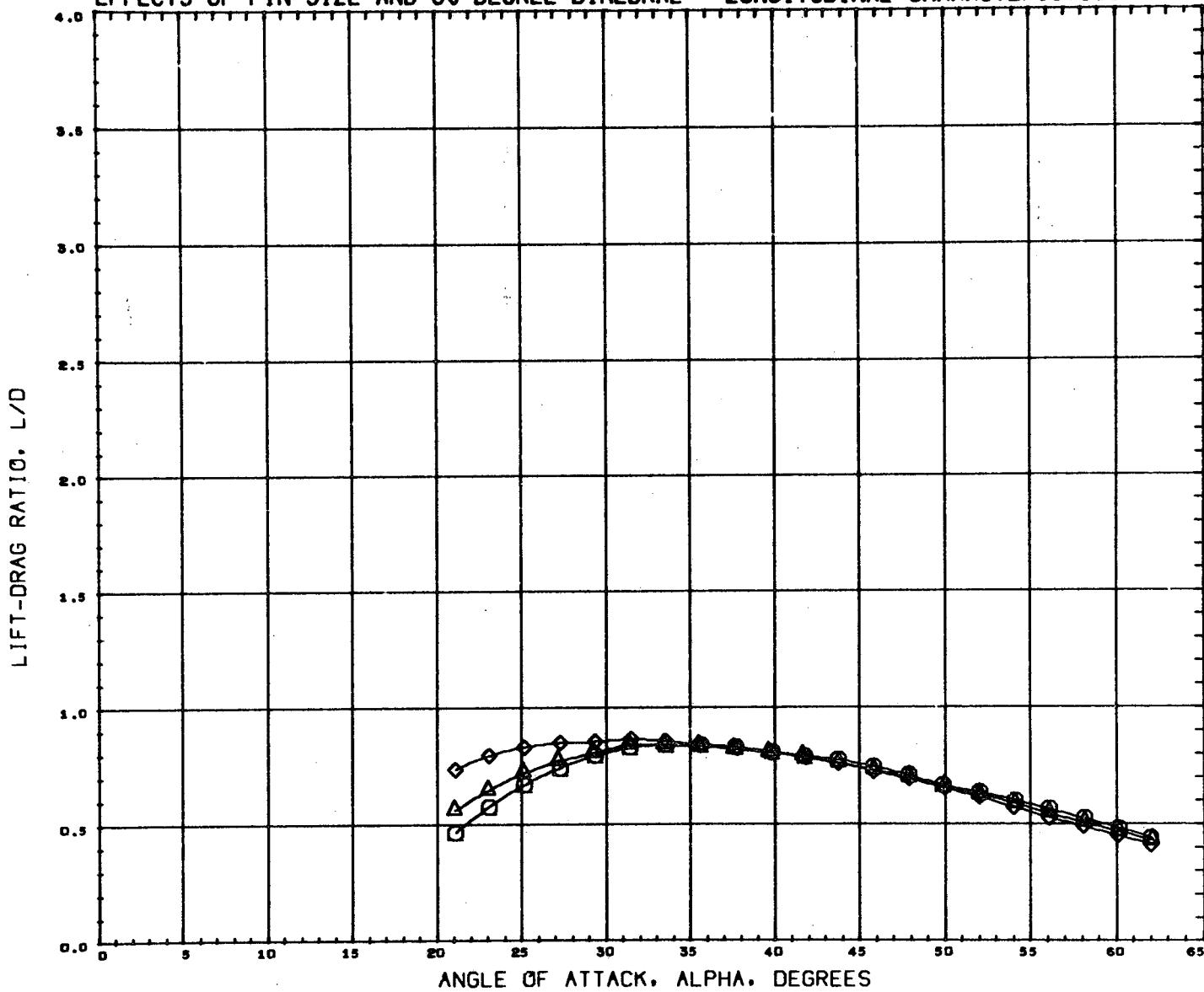
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MACH 0.899

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EFFECTS OF FIN SIZE AND 30 DEGREE DIHEDRAL - LONGITUDINAL CHARACTERISTICS



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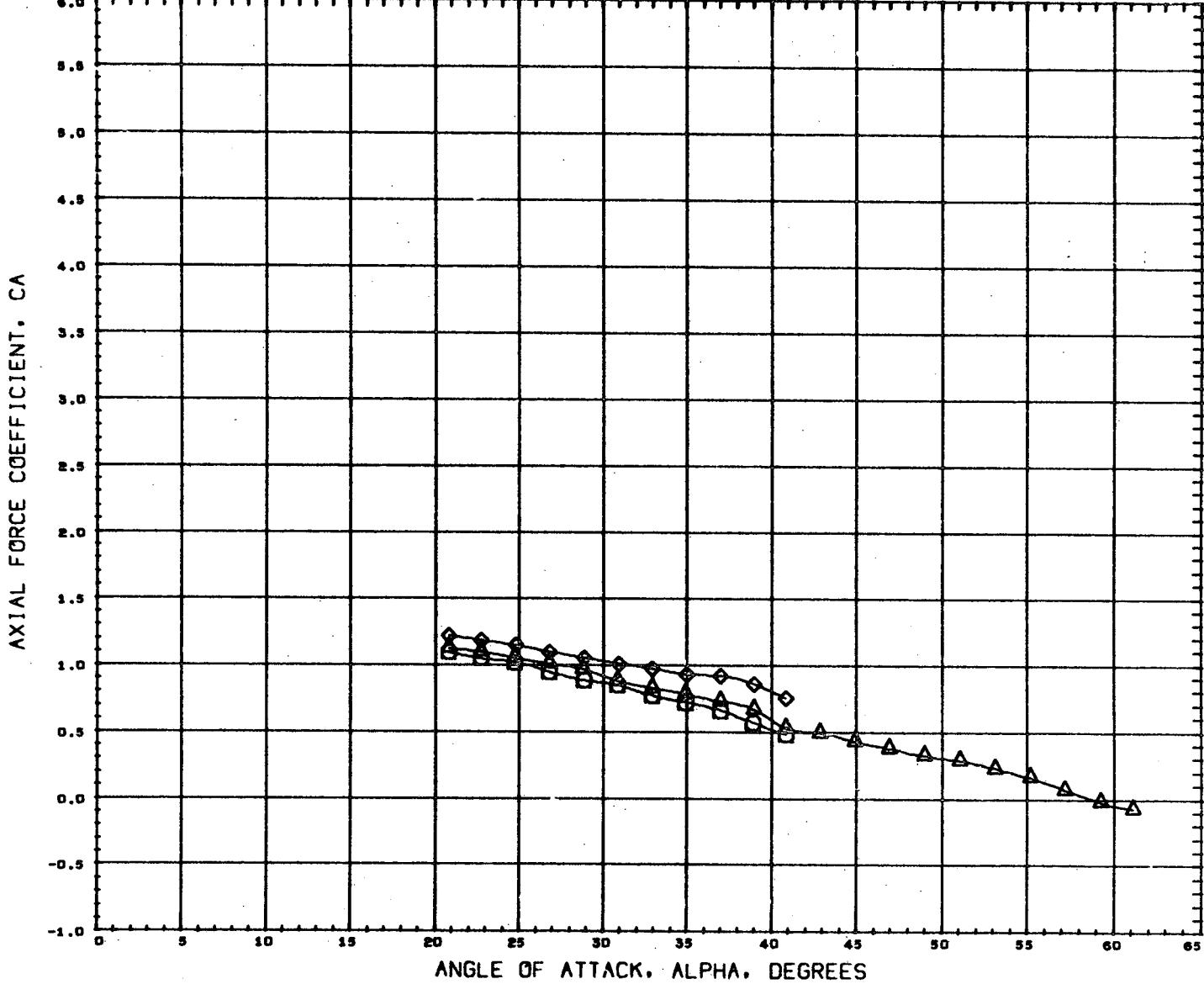
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PAGE 9

EFFECTS OF FIN SIZE AND 30 DEGREE DIHEDRAL - LONGITUDINAL CHARACTERISTICS



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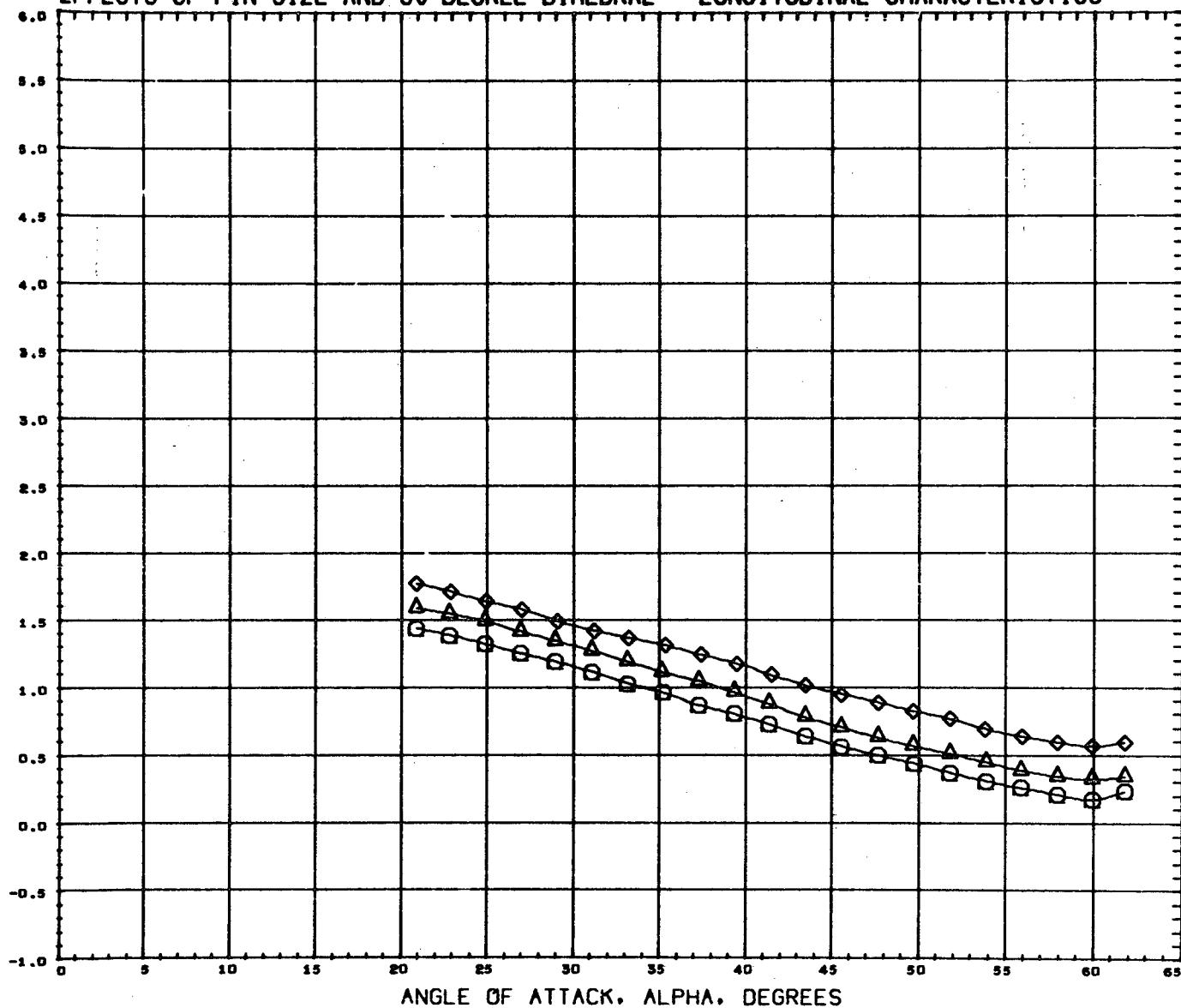
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MACH 0.600

EFFECTS OF FIN SIZE AND 30 DEGREE DIHEDRAL - LONGITUDINAL CHARACTERISTICS

AXIAL FORCE COEFFICIENT, CA



DATA SET SYMBOL CONFIGURATION DESCRIPTION

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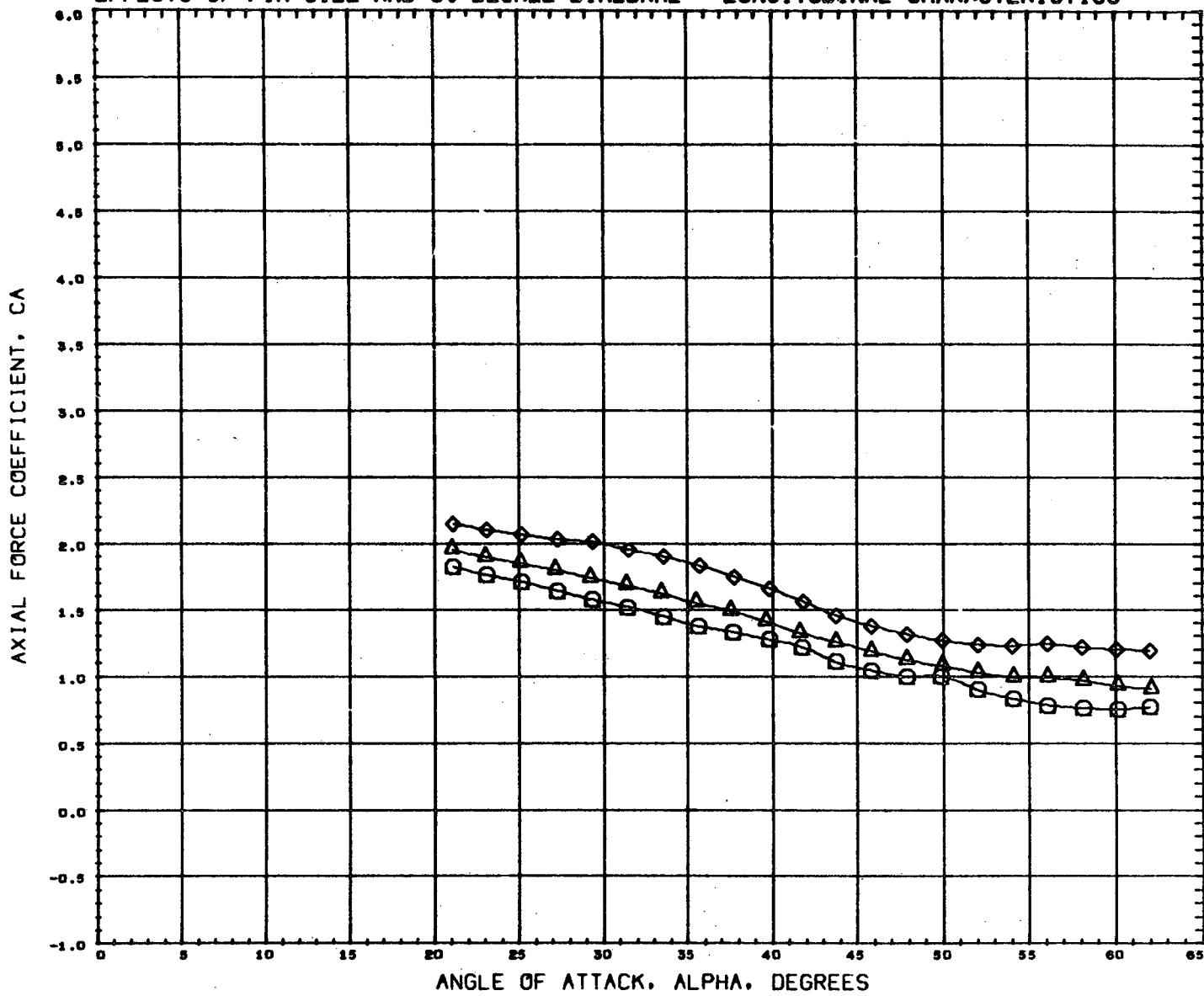
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MACH 0.899

EFFECTS OF FIN SIZE AND 30 DEGREE DIHEDRAL - LONGITUDINAL CHARACTERISTICS



DATA SET SYMBOL CONFIGURATION DESCRIPTION

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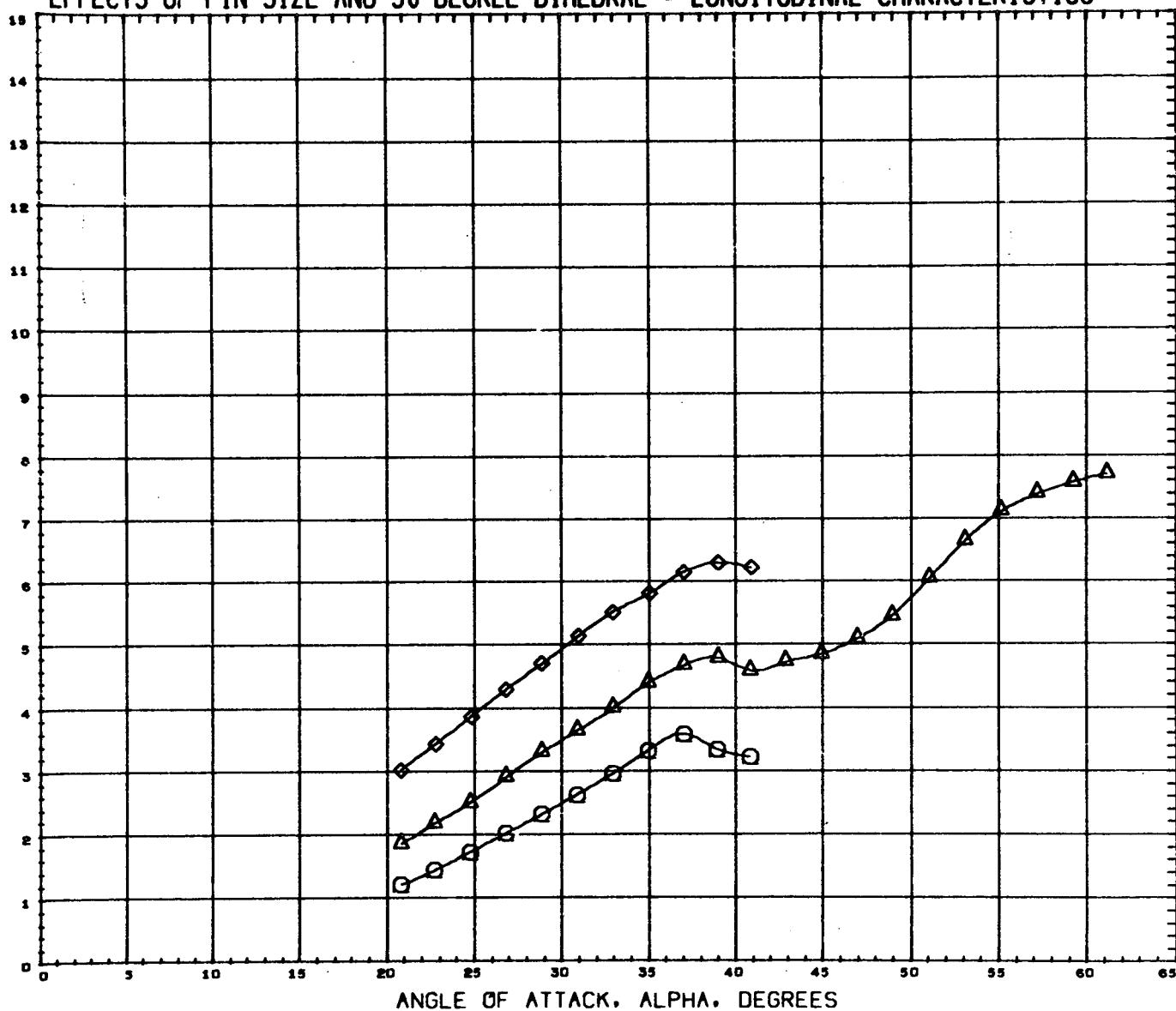
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MACH 1.200

PAGE 12

EFFECTS OF FIN SIZE AND 30 DEGREE DIHEDRAL - LONGITUDINAL CHARACTERISTICS

NORMAL FORCE COEFFICIENT, CN



ANGLE OF ATTACK, ALPHA, DEGREES

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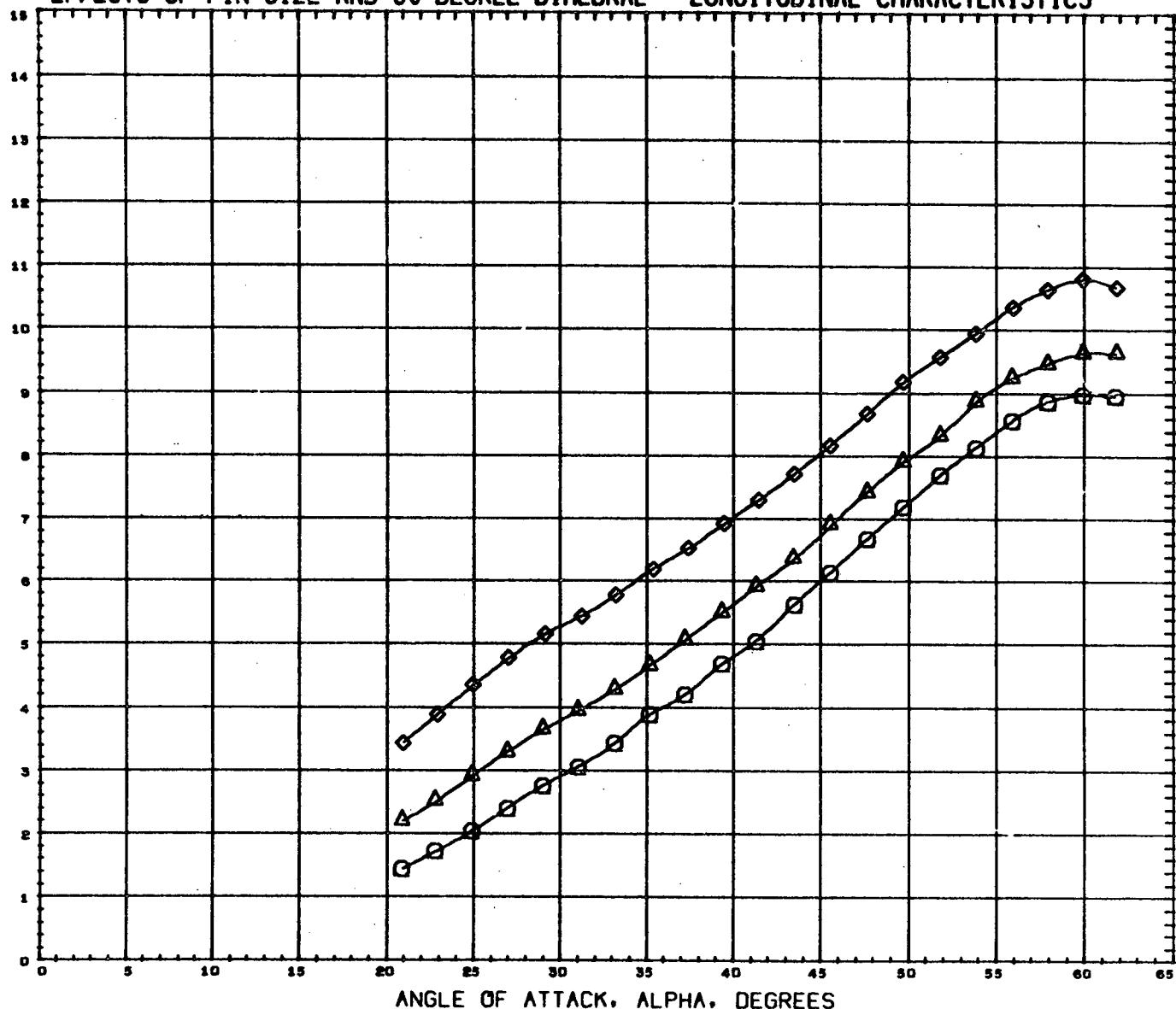
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 SCALE 0.0034

MACH 0.600

EFFECTS OF FIN SIZE AND 30 DEGREE DIHEDRAL - LONGITUDINAL CHARACTERISTICS

NORMAL FORCE COEFFICIENT, CN



ANGLE OF ATTACK, ALPHA, DEGREES

DATA SET SYMBOL CONFIGURATION DESCRIPTION
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 (K54907) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6

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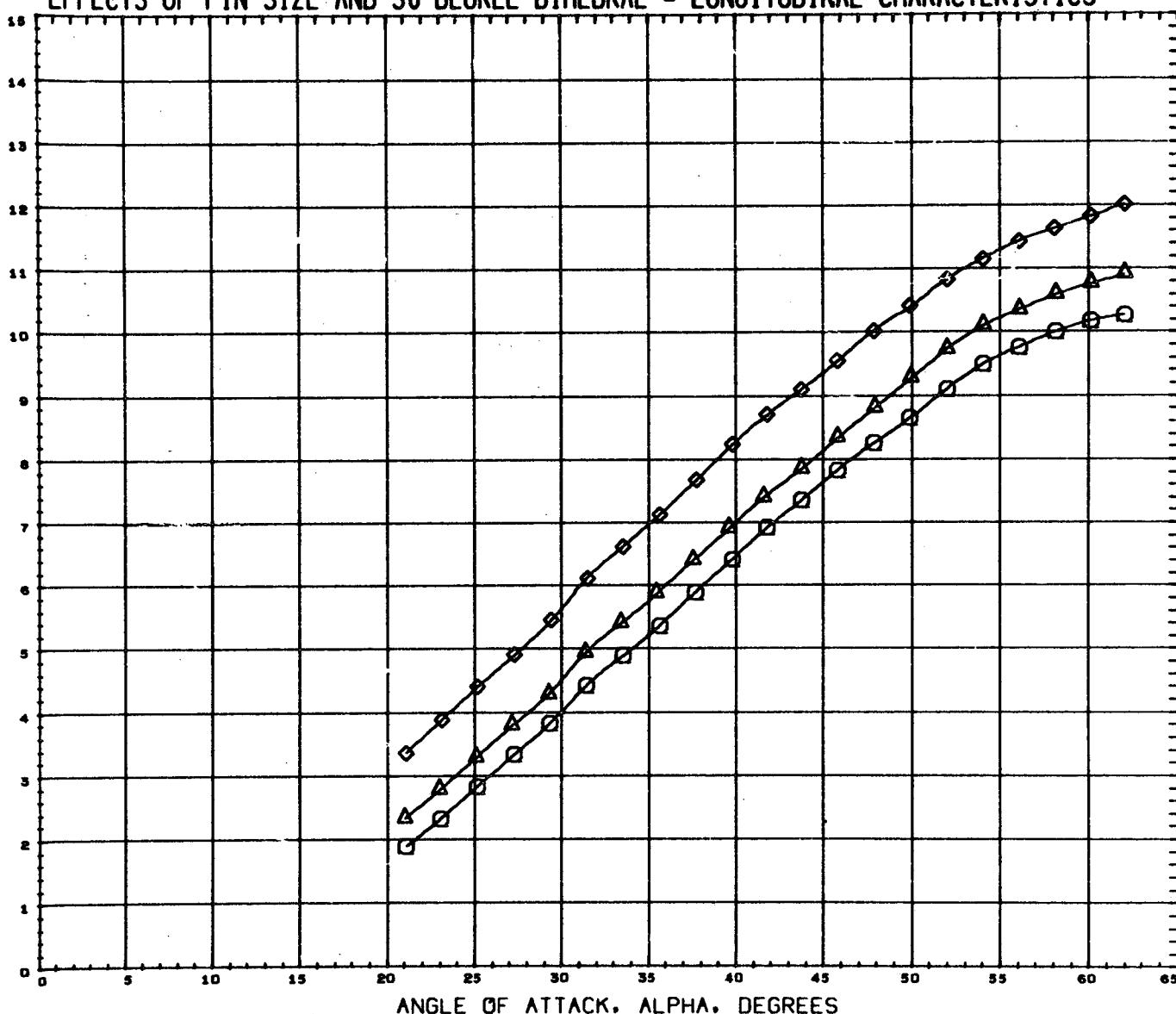
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 SCALE 0.0034

MACH 0.699

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EFFECTS OF FIN SIZE AND 30 DEGREE DIHEDRAL - LONGITUDINAL CHARACTERISTICS

NORMAL FORCE COEFFICIENT, CN



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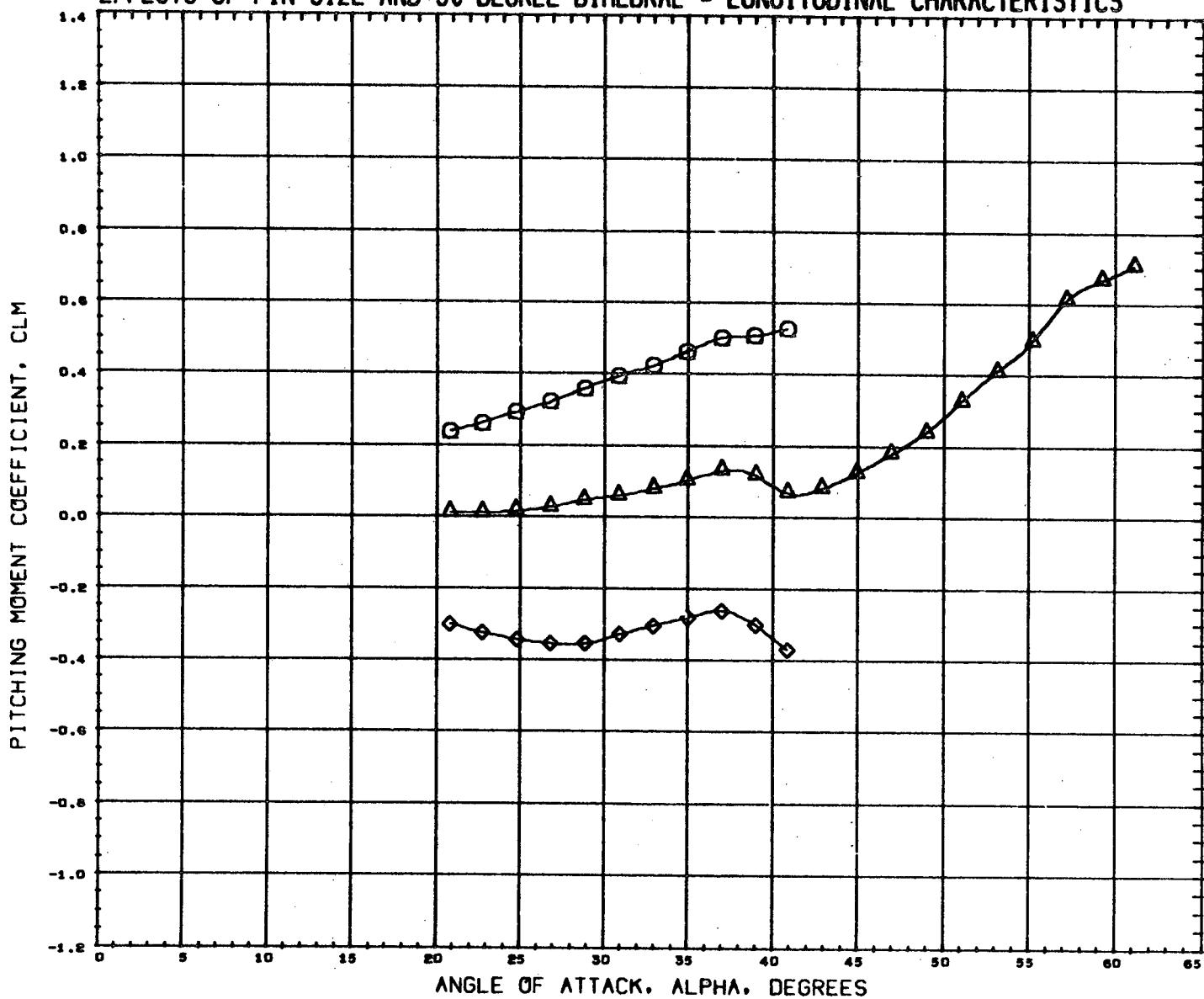
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 BREF 7.2230 IN.
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 ZMRF 0.0000 IN.
 SCALE 0.0034

MACH 1.200

PAGE 15

EFFECTS OF FIN SIZE AND 30 DEGREE DIHEDRAL - LONGITUDINAL CHARACTERISTICS



DATA SET SYMBOL CONFIGURATION DESCRIPTION

(K54S01) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1
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 (K54907) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6

BETA DIHDRL

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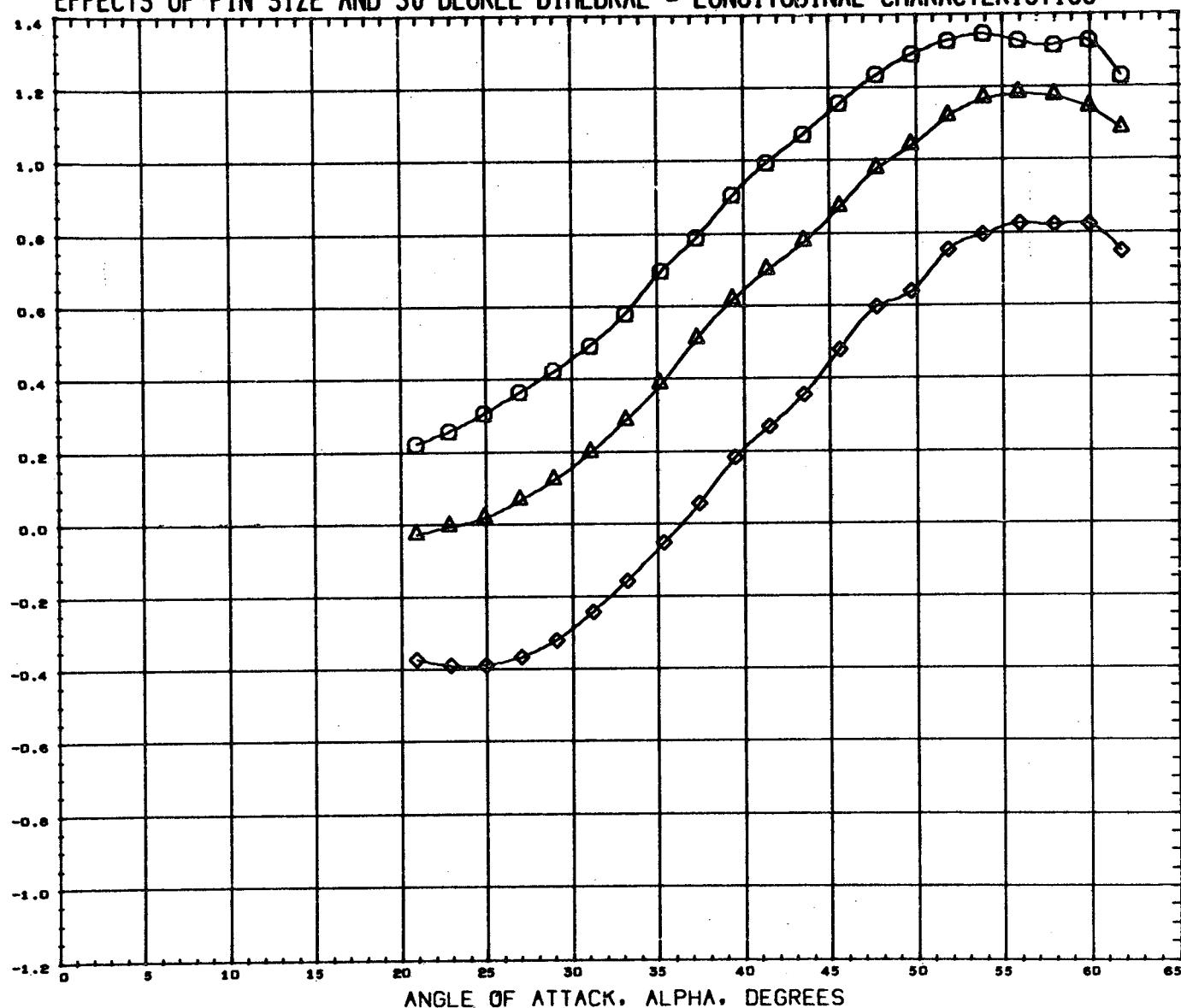
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PAGE 16

20

EFFECTS OF FIN SIZE AND 30 DEGREE DIHEDRAL - LONGITUDINAL CHARACTERISTICS

PITCHING MOMENT COEFFICIENT, CLM



DATA SET SYMBOL CONFIGURATION DESCRIPTION

(K54901) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1
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BETA DIHDRL

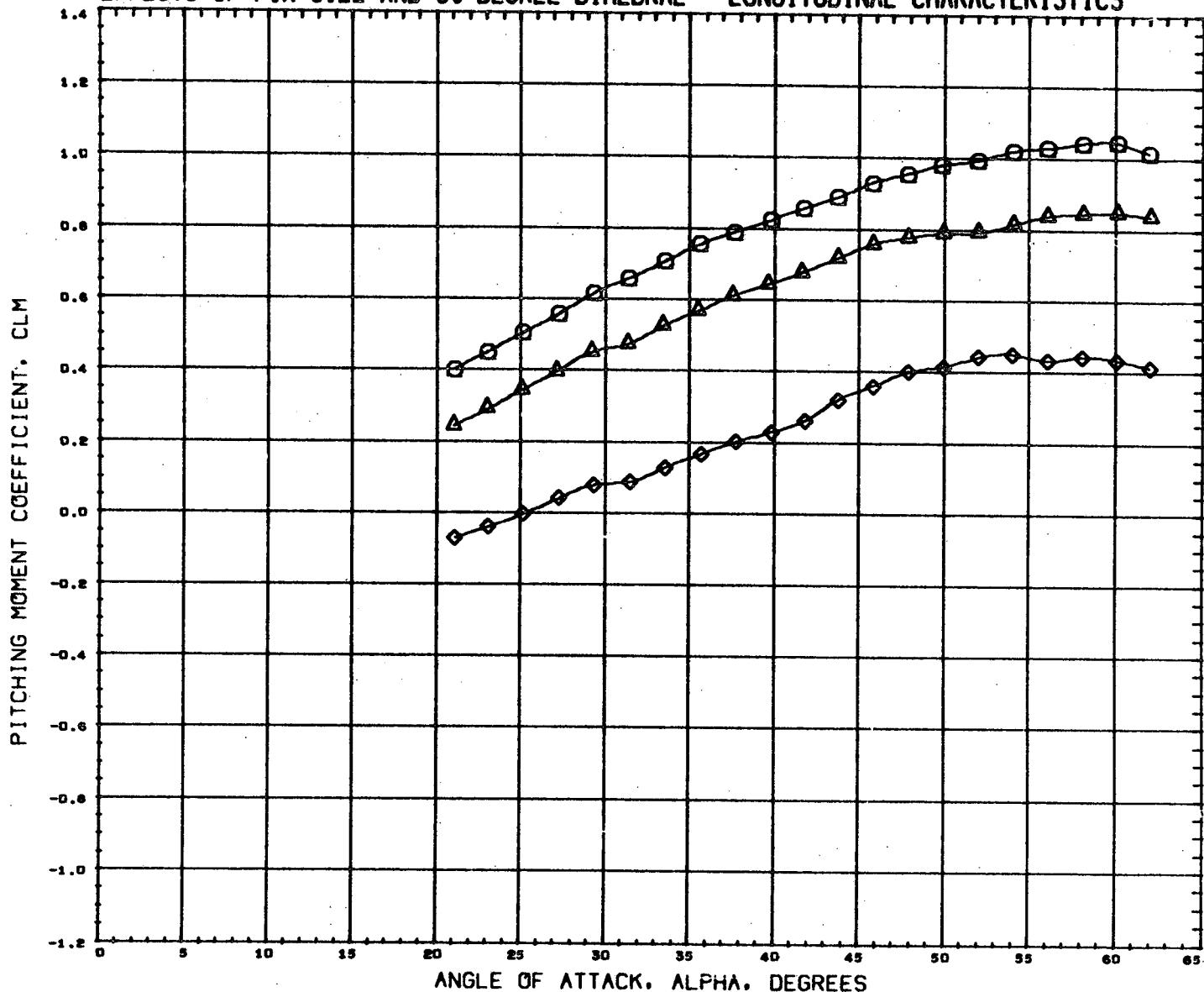
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 ZMRF 0.0000 IN.
 SCALE 0.0034

MACH 0.899

EFFECTS OF FIN SIZE AND 30 DEGREE DIHEDRAL - LONGITUDINAL CHARACTERISTICS



DATA SET SYMBOL CONFIGURATION DESCRIPTION

(K54901) Q MSFC 518 MSFC PRESSURE FED BOOSTER N1B1
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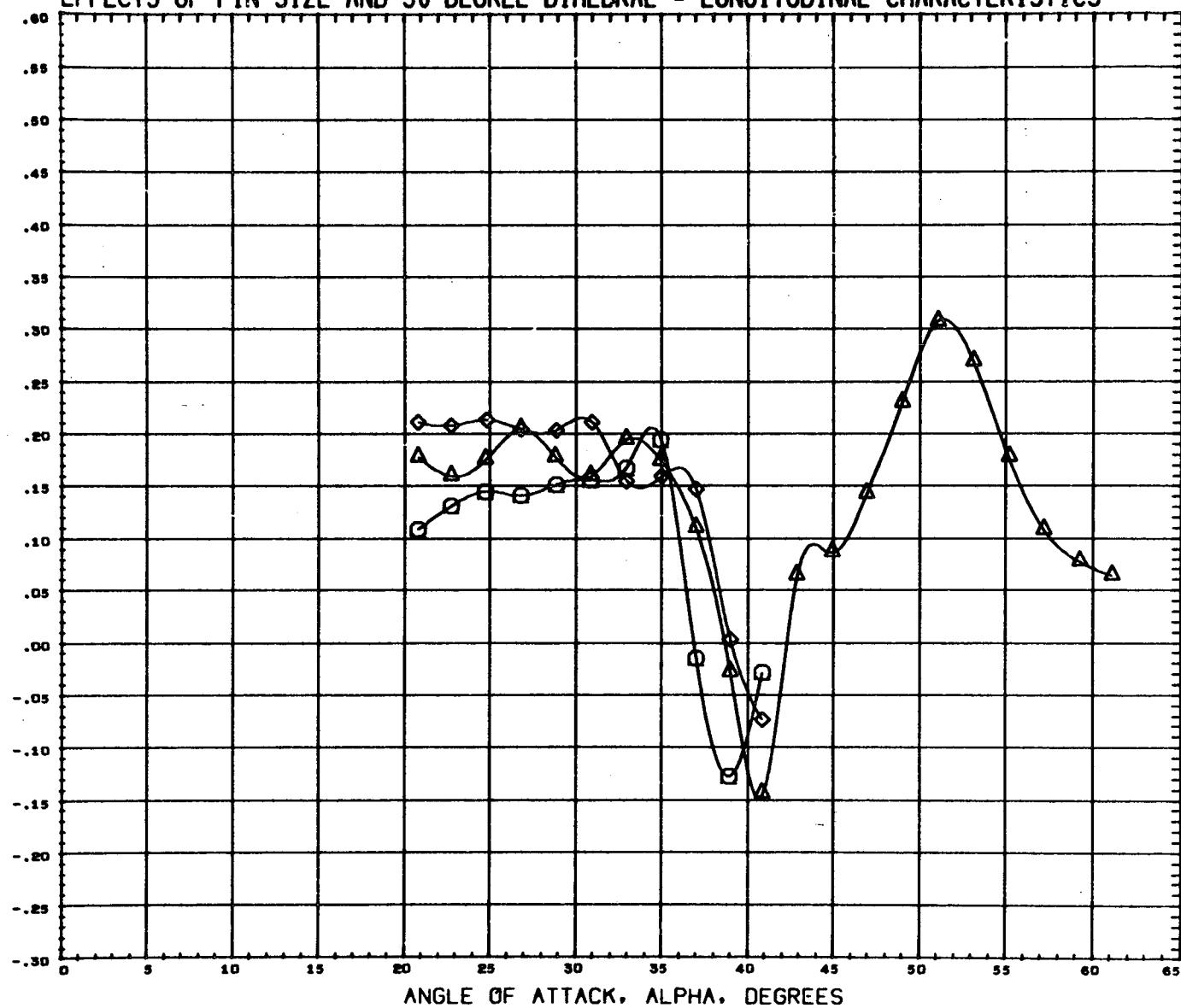
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ZMRP	0.0000	IN.
SCALE	0.0034	

MACH 1.200

EFFECTS OF FIN SIZE AND 30 DEGREE DIHEDRAL - LONGITUDINAL CHARACTERISTICS

LOCAL NORMAL FORCE COEFFICIENT SLOPE, CN/A, PER DEGREE



DATA SET SYMBOL CONFIGURATION DESCRIPTION

(K54901) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1
 (K54903) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F2
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BETA DIHDRL

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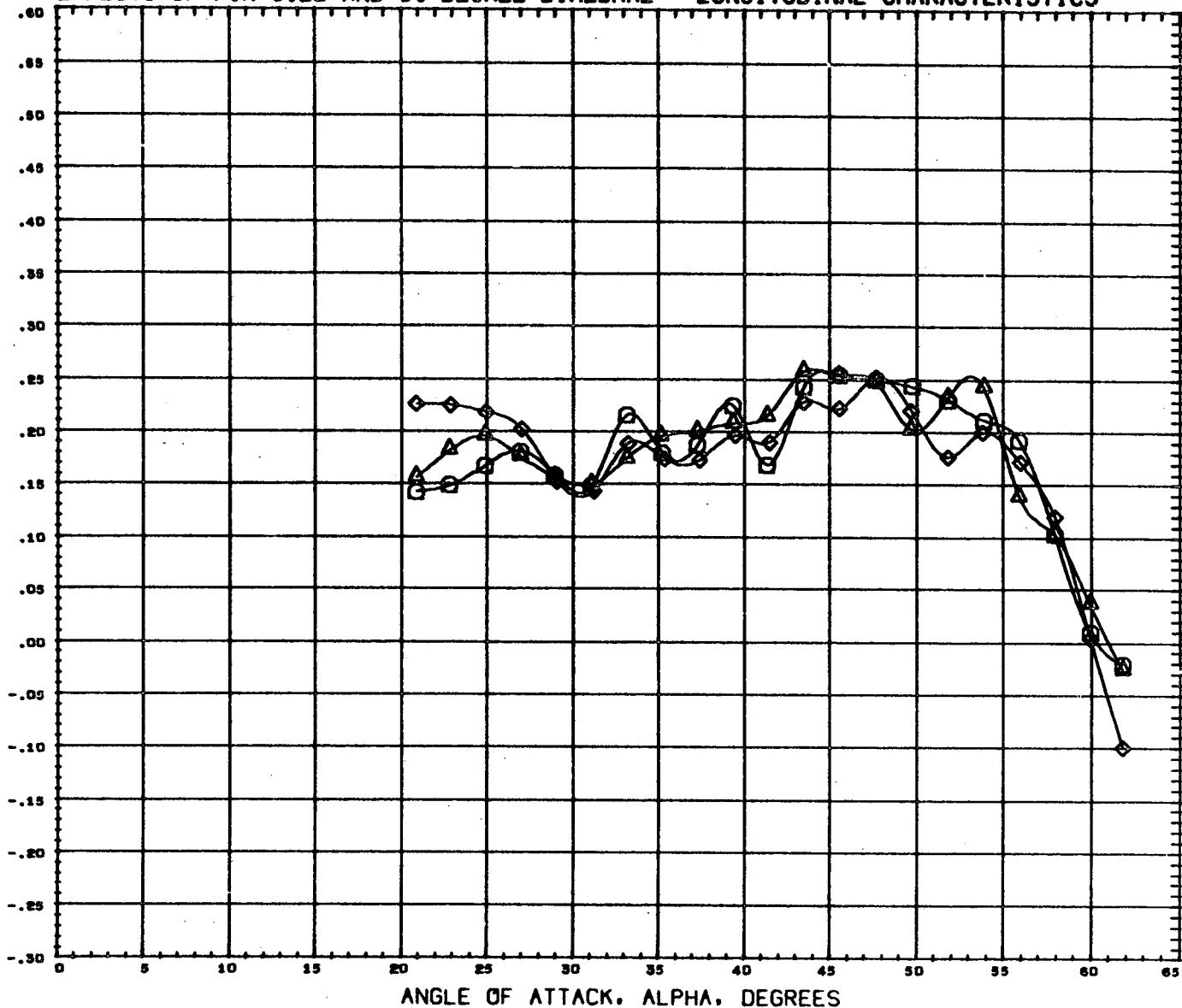
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 SCALE 0.0034

MACH 0.600

EFFECTS OF FIN SIZE AND 30 DEGREE DIHEDRAL - LONGITUDINAL CHARACTERISTICS

LOCAL NORMAL FORCE COEFFICIENT SLOPE. CN/A. PER DEGREE



ANGLE OF ATTACK. ALPHA. DEGREES

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(K54901) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1
 (K54903) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F2
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BETA DIMDRL

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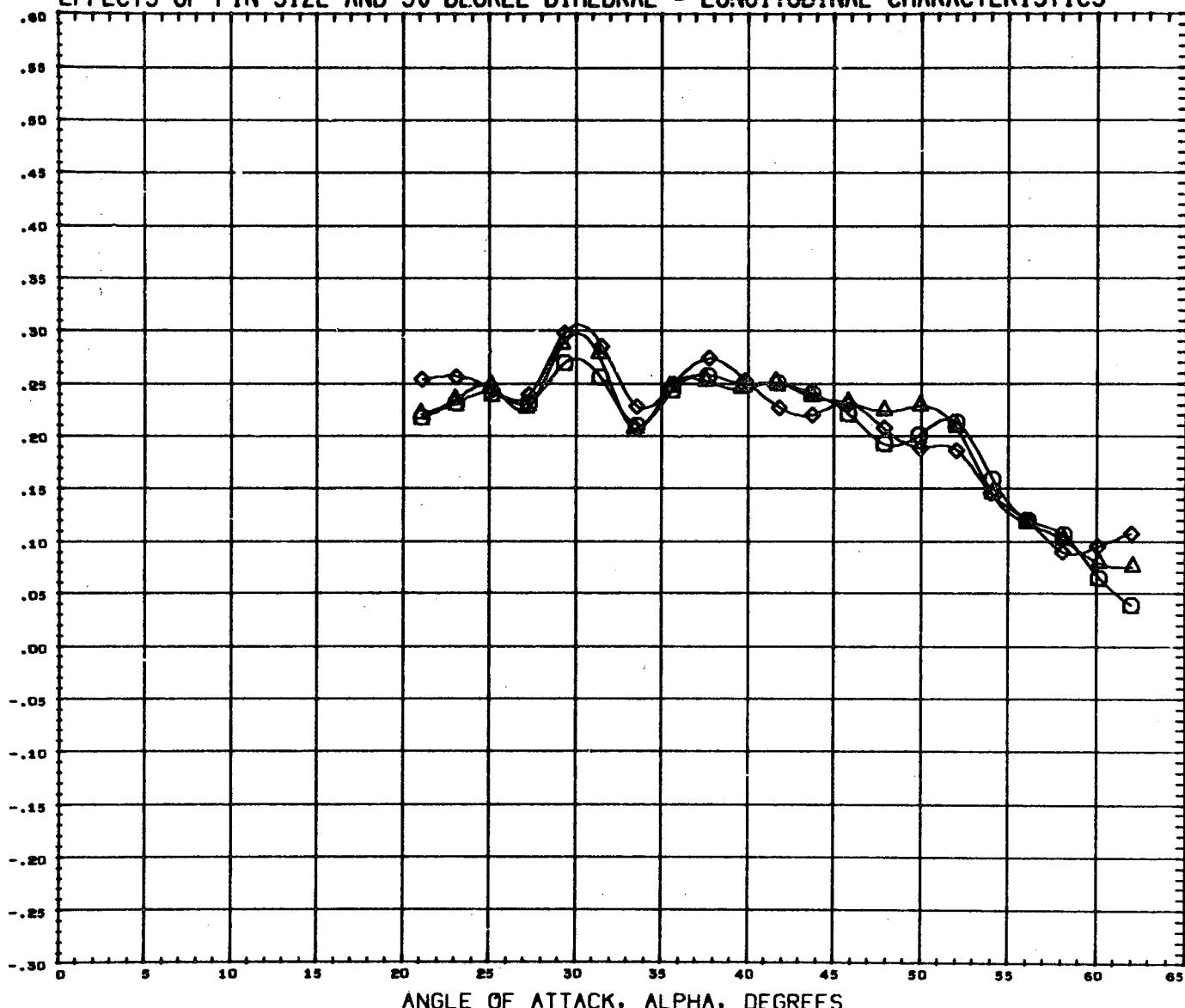
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 ZMMP 0.0000 IN.
 SCALE 0.0034

MACH 0.899

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EFFECTS OF FIN SIZE AND 30 DEGREE DIHEDRAL - LONGITUDINAL CHARACTERISTICS

LOCAL NORMAL FORCE COEFFICIENT SLOPE, CN/A, PER DEGREE



ANGLE OF ATTACK, ALPHA, DEGREES

DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(K54901)	MSFC 518 MSFC PRESSURE FED BOOSTER N1B1
(K54903)	MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F2
(K54907)	MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6

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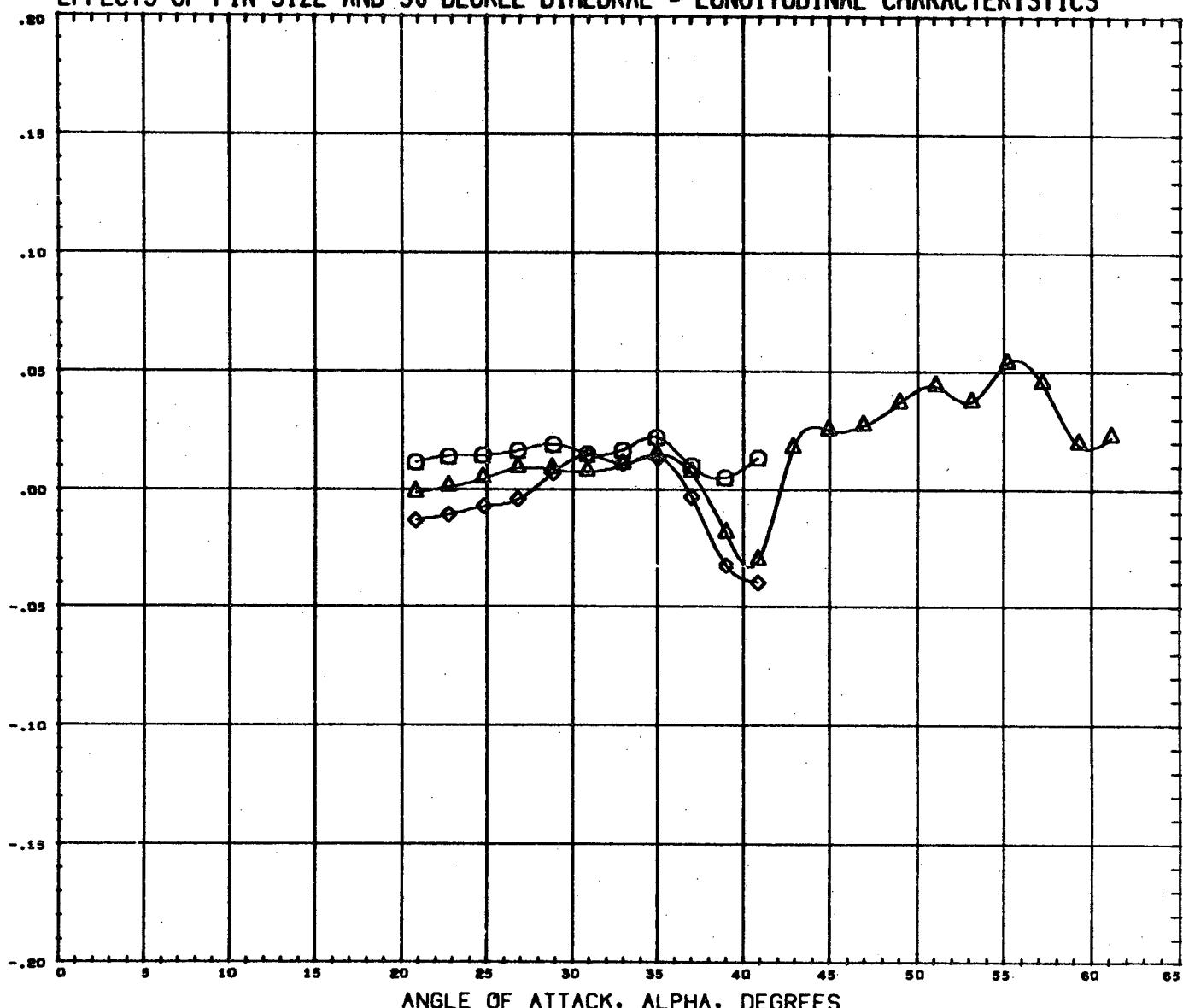
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ZMRP 0.0000 IN.
SCALE 0.0034

MACH 1.200

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EFFECTS OF FIN SIZE AND 30 DEGREE DIHEDRAL - LONGITUDINAL CHARACTERISTICS

LOCAL PITCHING MOMENT COEFFICIENT SLOPE, CLM/A, PER DEGREE



DATA SET SYMBOL CONFIGURATION DESCRIPTION

(K54901) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1
 (I54903) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F2
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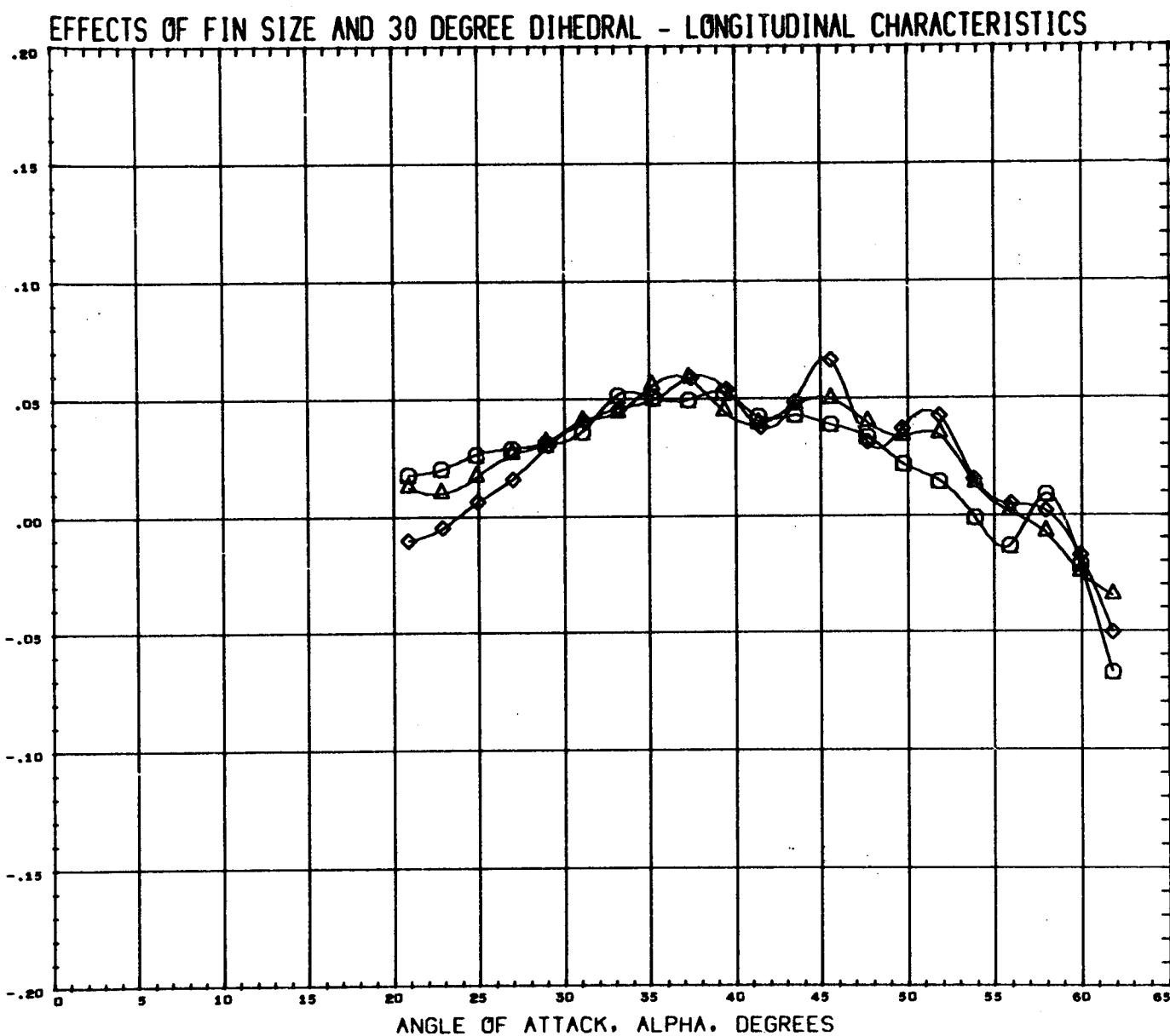
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 YMRP 0.0000 IN.
 ZMRP 0.0000 IN.
 SCALE 0.0034

MACH 0.600

LOCAL PITCHING MOMENT COEFFICIENT SLOPE, CLM/A, PER DEGREE



DATA SET SYMBOL CONFIGURATION DESCRIPTION

(K54901) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1
 (K54903) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F2
 (K54907) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6

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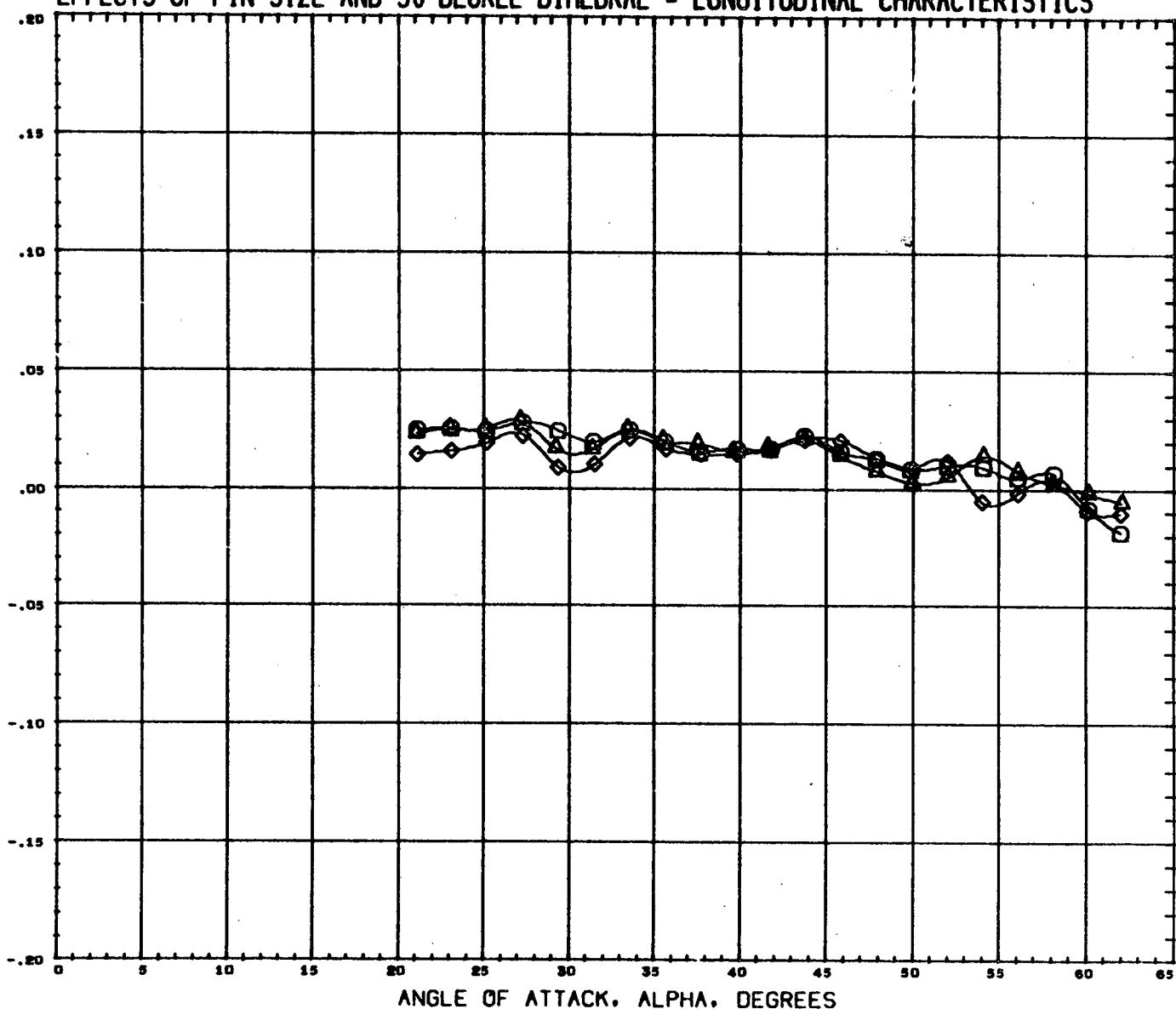
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YMRP 0.0000 IN.
ZMRP 0.0000 IN.
SCALE 0.0034

MACH 0.899

EFFECTS OF FIN SIZE AND 30 DEGREE DIHEDRAL - LONGITUDINAL CHARACTERISTICS

LOCAL PITCHING MOMENT COEFFICIENT SLOPE, CLM/A, PER DEGREE



DATA SET SYMBOL CONFIGURATION DESCRIPTION

(K54901) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1
 (I54903) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F2
 (K54907) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6

BETA DIHDL

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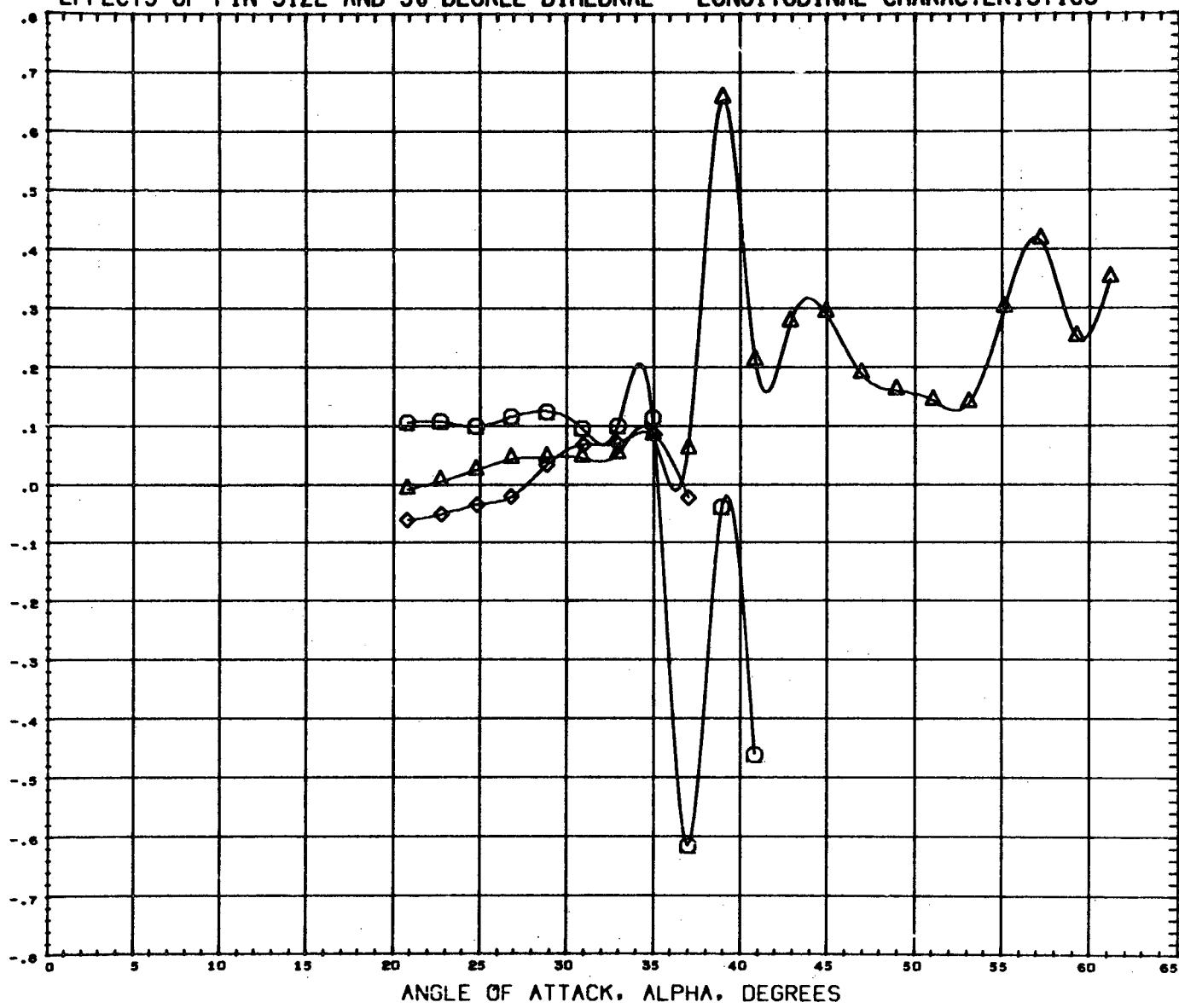
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 ZMRP 0.0000 IN.
 SCALE 0.0034

MACH 1.200

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EFFECTS OF FIN SIZE AND 30 DEGREE DIHEDRAL - LONGITUDINAL CHARACTERISTICS

LOCAL CENTER OF PRESSURE, XAC = CLM/A / CN/A



DATA SET SYMBOL CONFIGURATION DESCRIPTION

(U549D1) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1
 (U549D3) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F2
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BETA DIHDRL

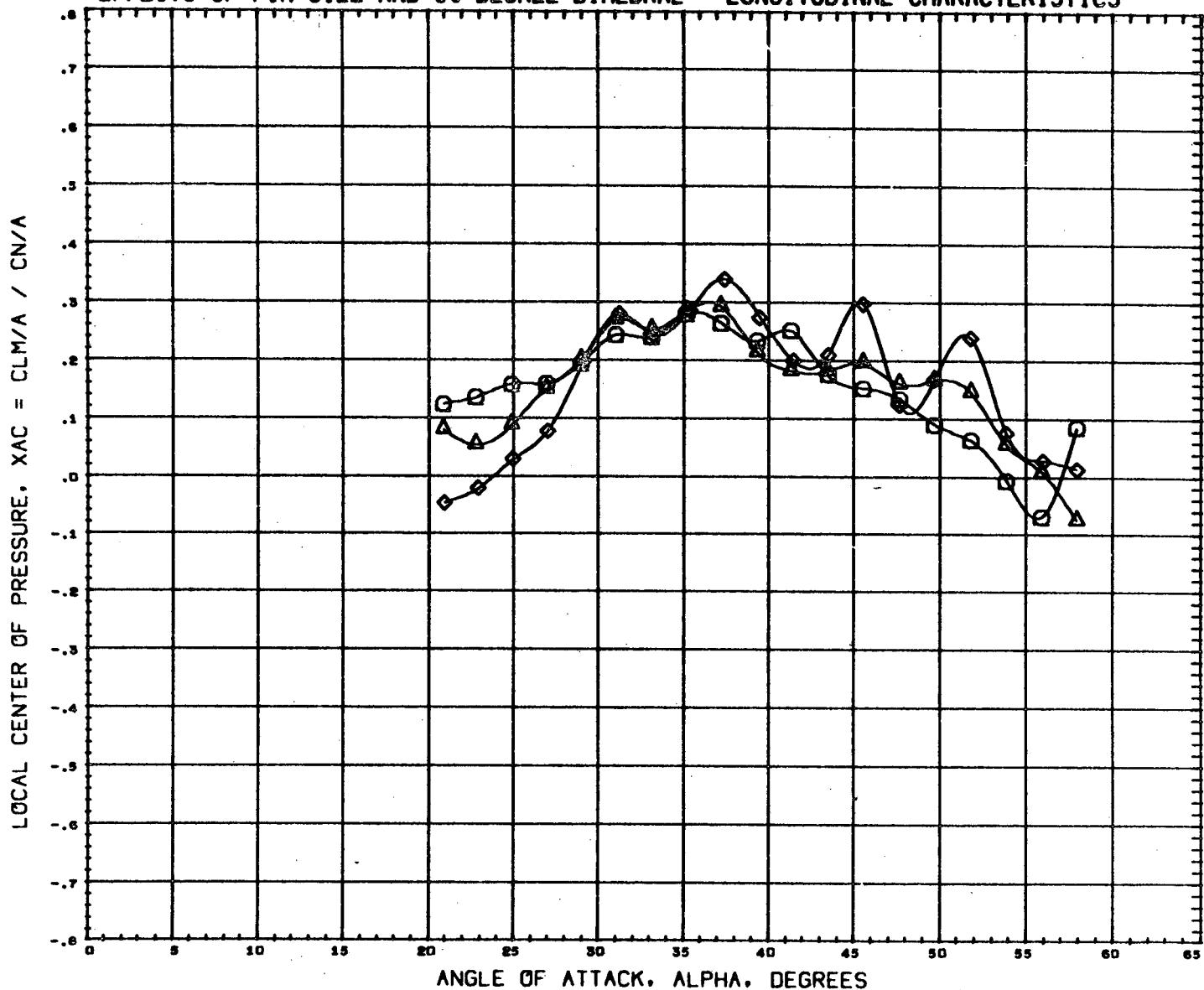
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 SCALE 0.0034

MACH 0.600

EFFECTS OF FIN SIZE AND 30 DEGREE DIHEDRAL - LONGITUDINAL CHARACTERISTICS



DATA SET SYMBOL CONFIGURATION DESCRIPTION

(U54901)		MSFC 518	MSFC PRESSURE FED BOOSTER	N1B1
(Q54905)		MSFC 518	MSFC PRESSURE FED BOOSTER	N1B1F2
(U54907)		MSFC 518	MSFC PRESSURE FED BOOSTER	N1B1F6

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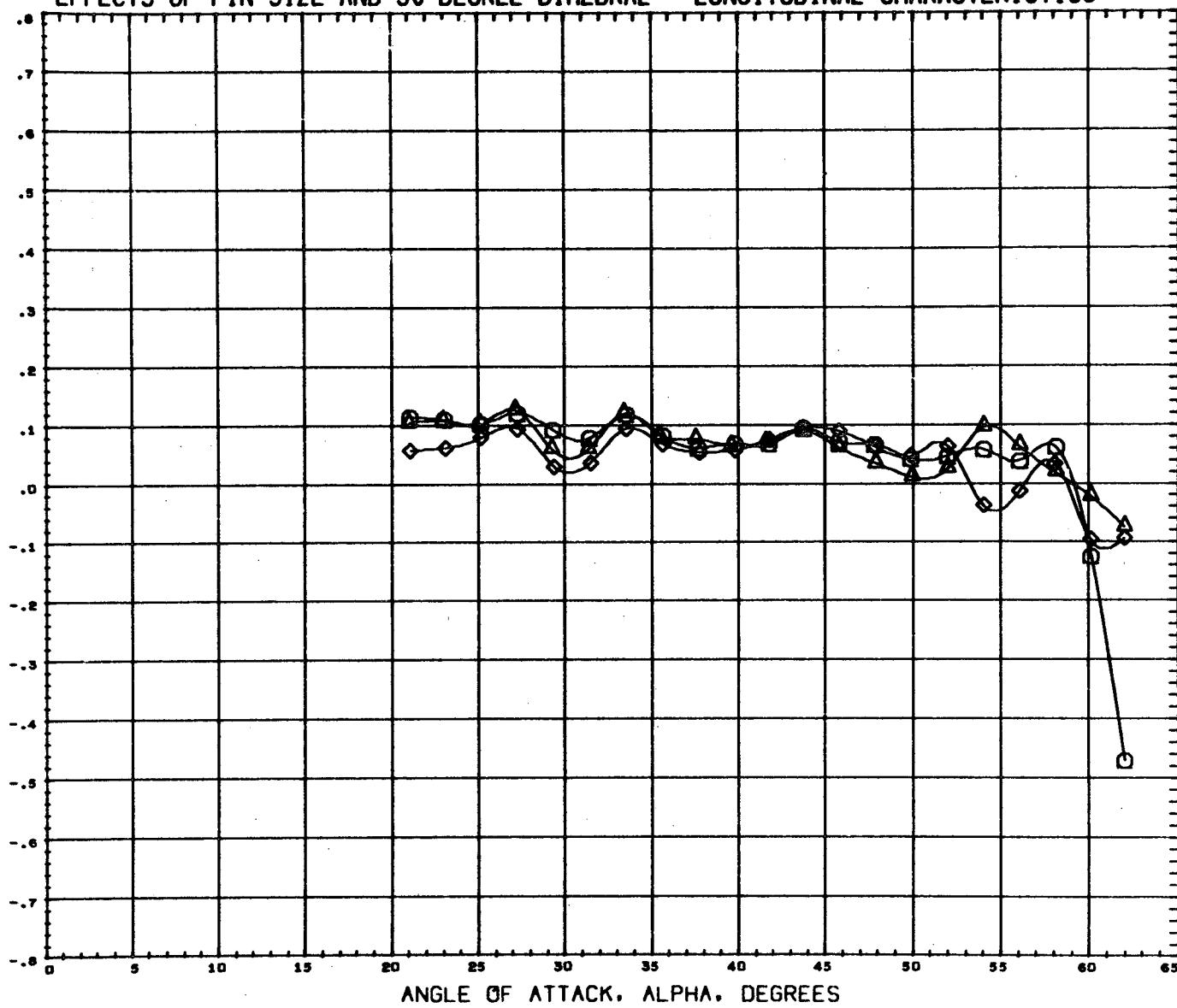
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XMRP	4.3340	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

MACH 0.899

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EFFECTS OF FIN SIZE AND 30 DEGREE DIHEDRAL - LONGITUDINAL CHARACTERISTICS

LOCAL CENTER OF PRESSURE, $X_{AC} = CLM/A / CN/A$



DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (U54903) Q MSFC 518 MSFC PRESSURE FED BOOSTER N1B1
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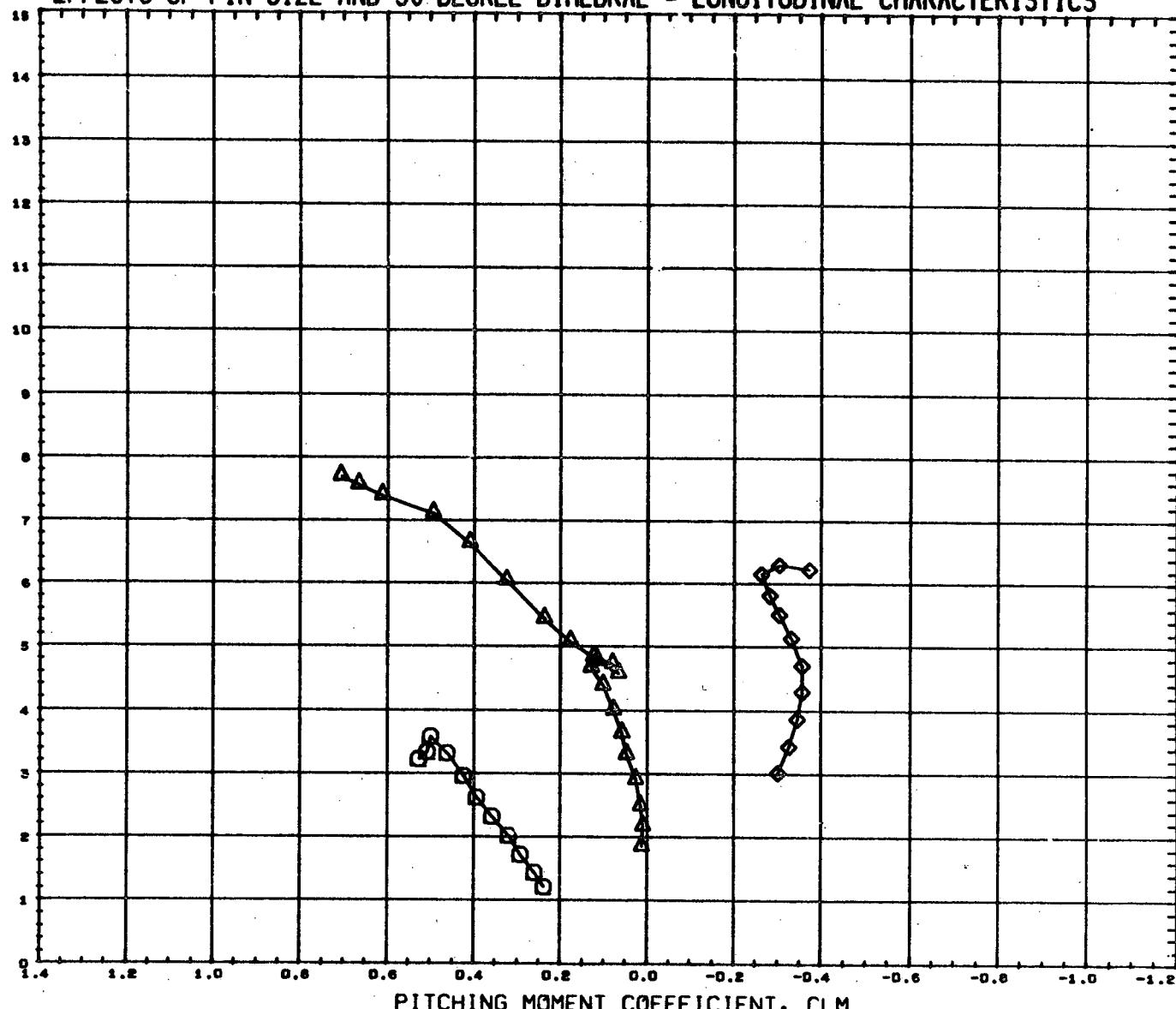
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 SCALE 0.0034

MACH 1.200

EFFECTS OF FIN SIZE AND 30 DEGREE DIHEDRAL - LONGITUDINAL CHARACTERISTICS

NORMAL FORCE COEFFICIENT, CN



PITCHING MOMENT COEFFICIENT, CLM

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(K54901) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1
 (K54903) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F2
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BETA DIHDRL

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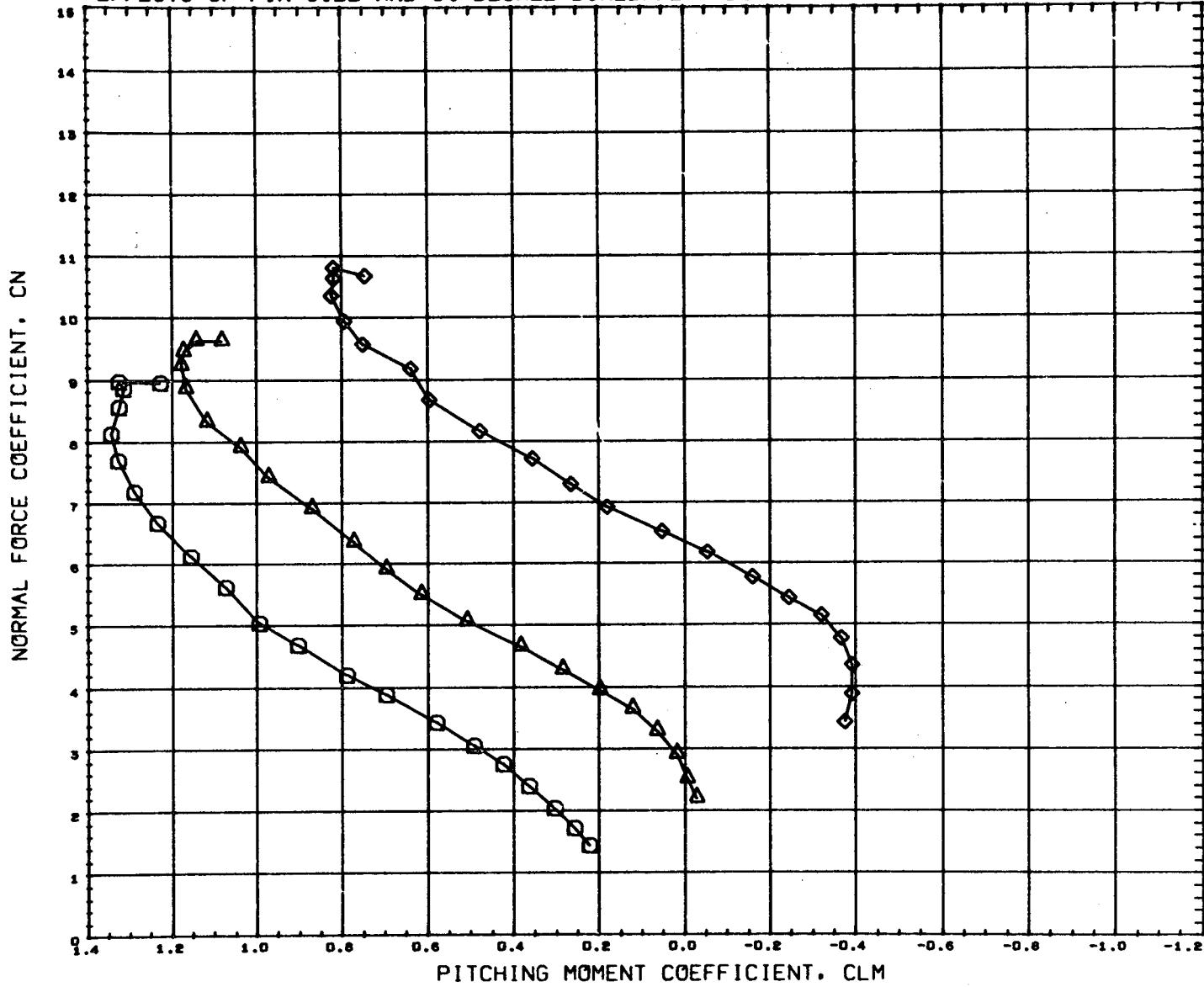
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BREF 7.2230 IN.
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ZMRP 0.0000 IN.
SCALE 0.0034

MACH 0.600

PAGE 28

EFFECTS OF FIN SIZE AND 30 DEGREE DIHEDRAL - LONGITUDINAL CHARACTERISTICS



DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (K54901) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1
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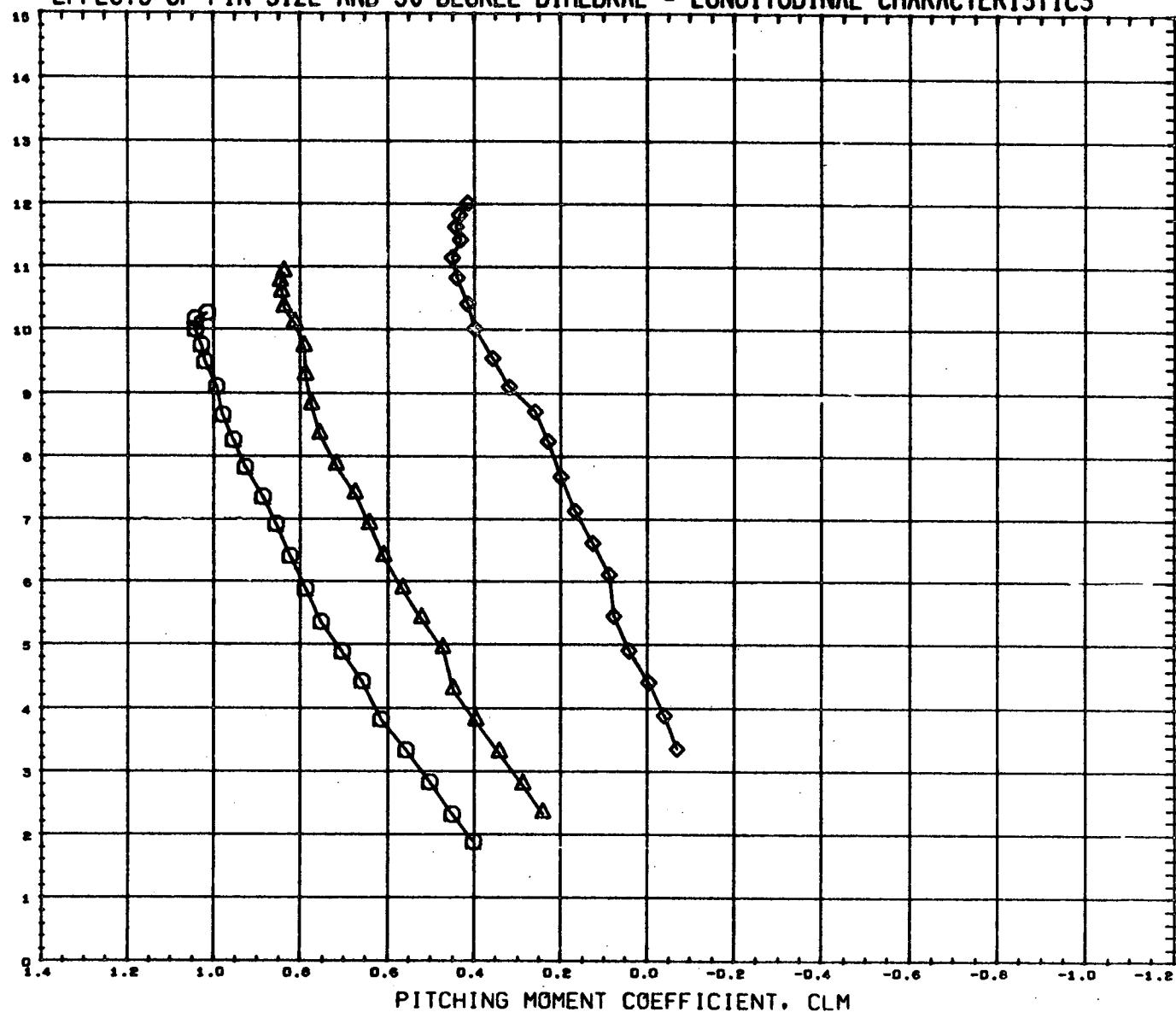
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 YMRP 0.0000 IN.
 ZMRP 0.0000 IN.
 SCALE 0.0034

MACH 0.899

EFFECTS OF FIN SIZE AND 30 DEGREE DIHEDRAL - LONGITUDINAL CHARACTERISTICS

NORMAL FORCE COEFFICIENT, CN



PITCHING MOMENT COEFFICIENT, CLM

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(K54901) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1
(K54903) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F2
(K54907) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6

BETA DIHDRL

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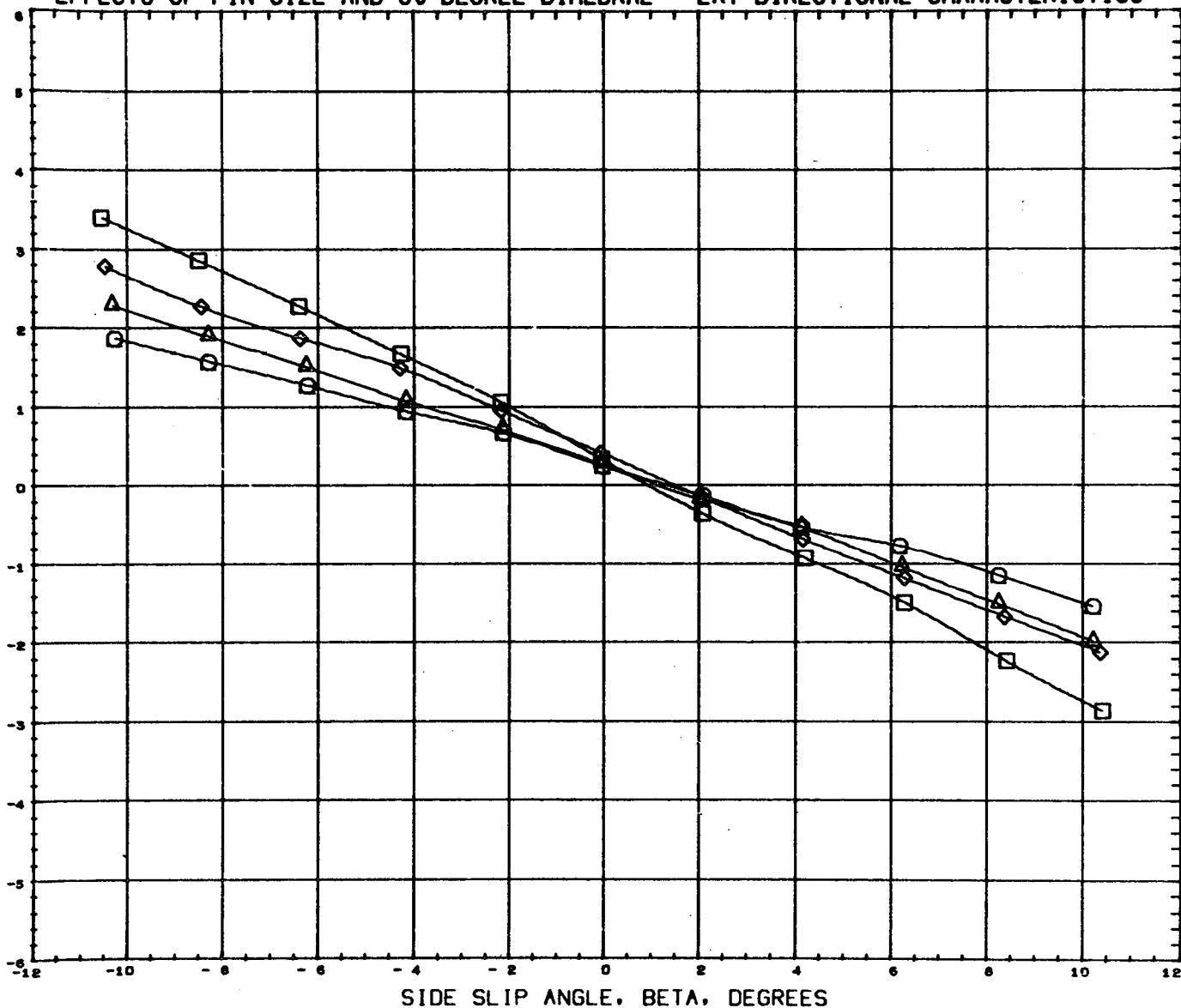
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SCALE 0.0034

MACH 1.200

PAGE 30

EFFECTS OF FIN SIZE AND 30 DEGREE DIHEDRAL - LAT-DIRECTIONAL CHARACTERISTICS

SIDE FORCE COEFFICIENT, CY



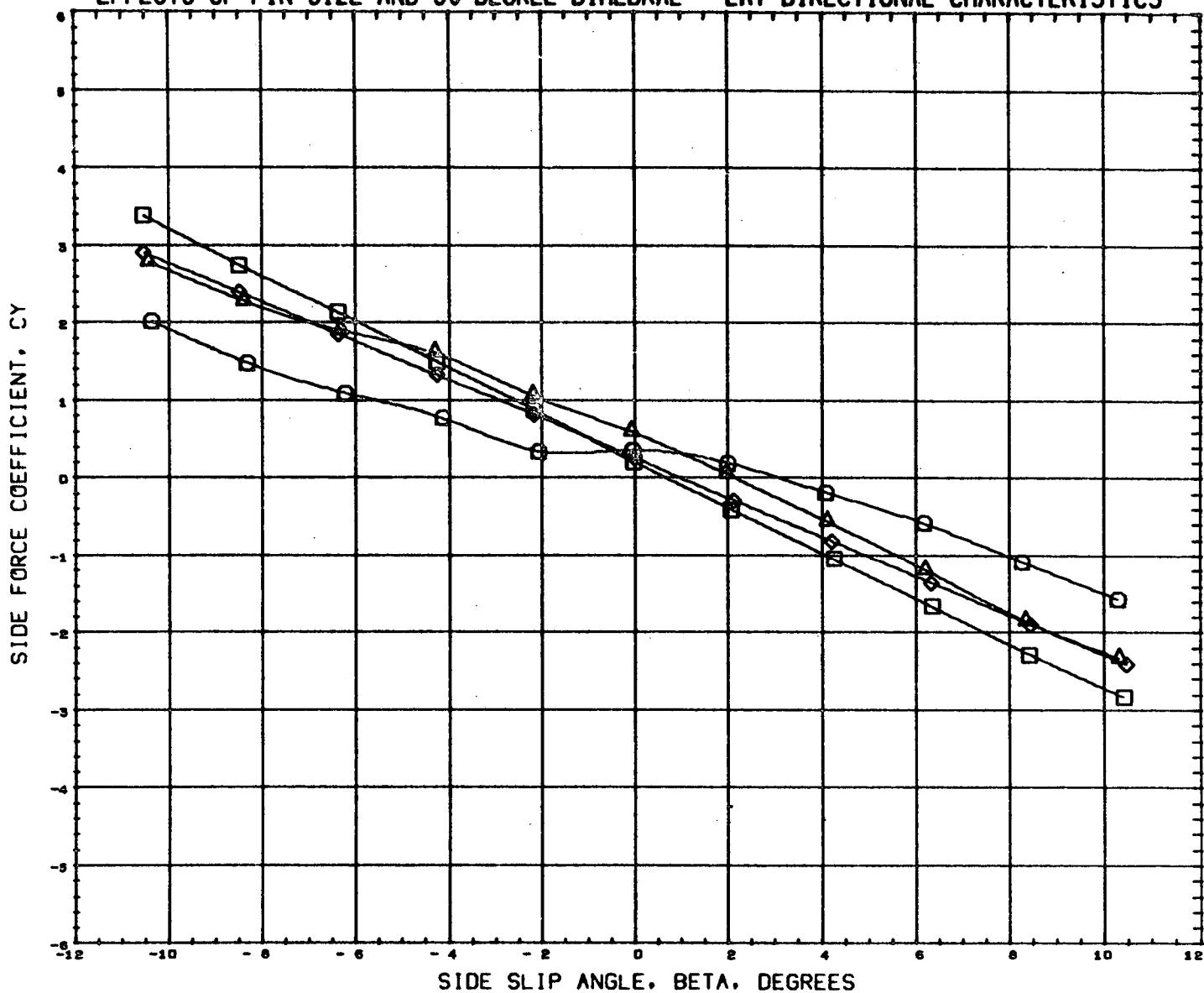
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 (S54005) ◇ MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F2
 (S54009) □ MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6

ALPHA DIHDL
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 SCALE 0.0034

MACH 0.902

EFFECTS OF FIN SIZE AND 30 DEGREE DIHEDRAL - LAT-DIRECTIONAL CHARACTERISTICS



DATA SET SYMBOL	CONFIGURATION DESCRIPTION
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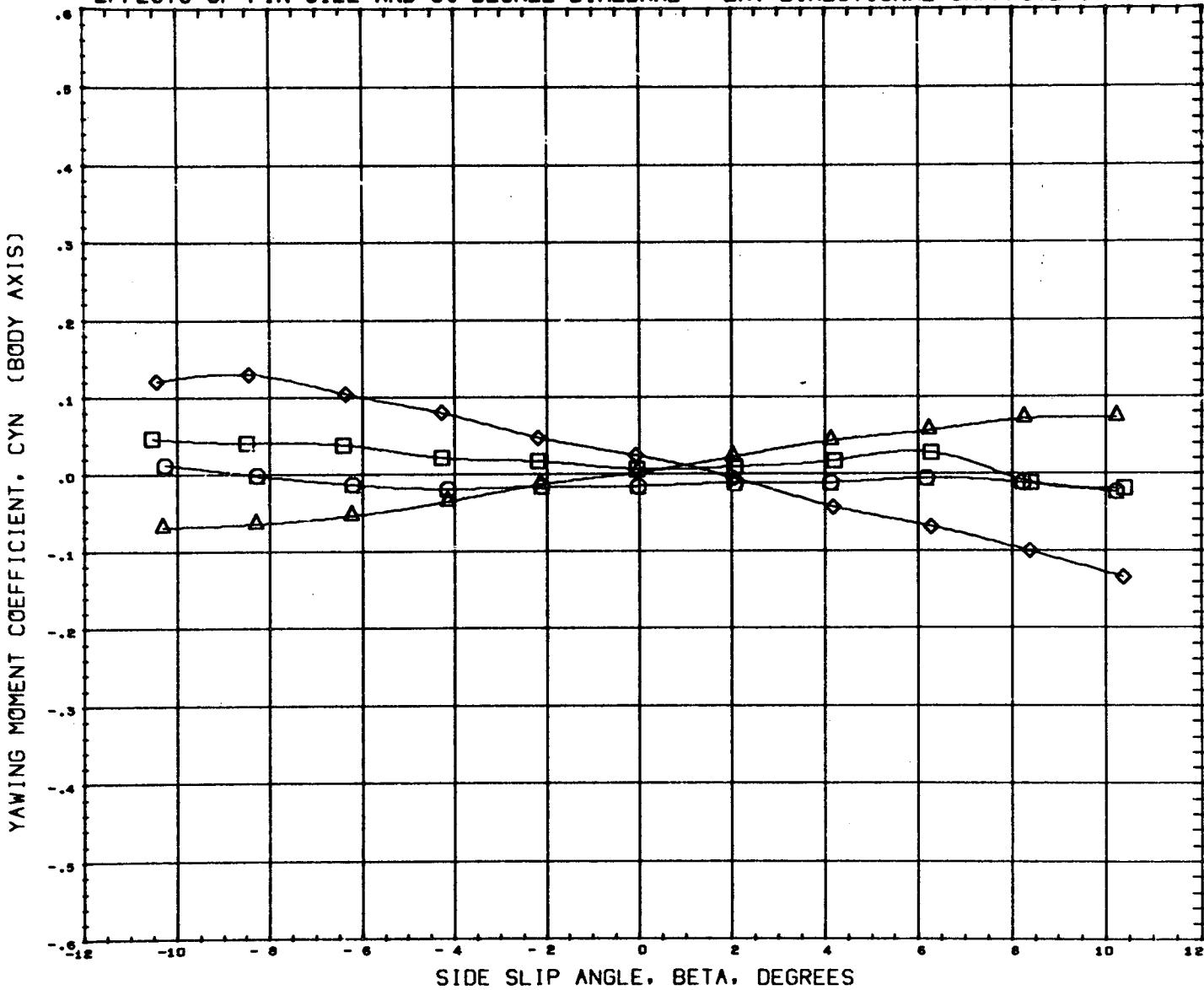
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BREF 7.2230 IN.
XMRP 4.3340 IN.
YMRP 0.0000 IN.
ZMRP 0.0000 IN.
SCALE 0.0034

MACH 1.201

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EFFECTS OF FIN SIZE AND 30 DEGREE DIHEDRAL - LAT-DIRECTIONAL CHARACTERISTICS



DATA SET SYMBOL CONFIGURATION DESCRIPTION
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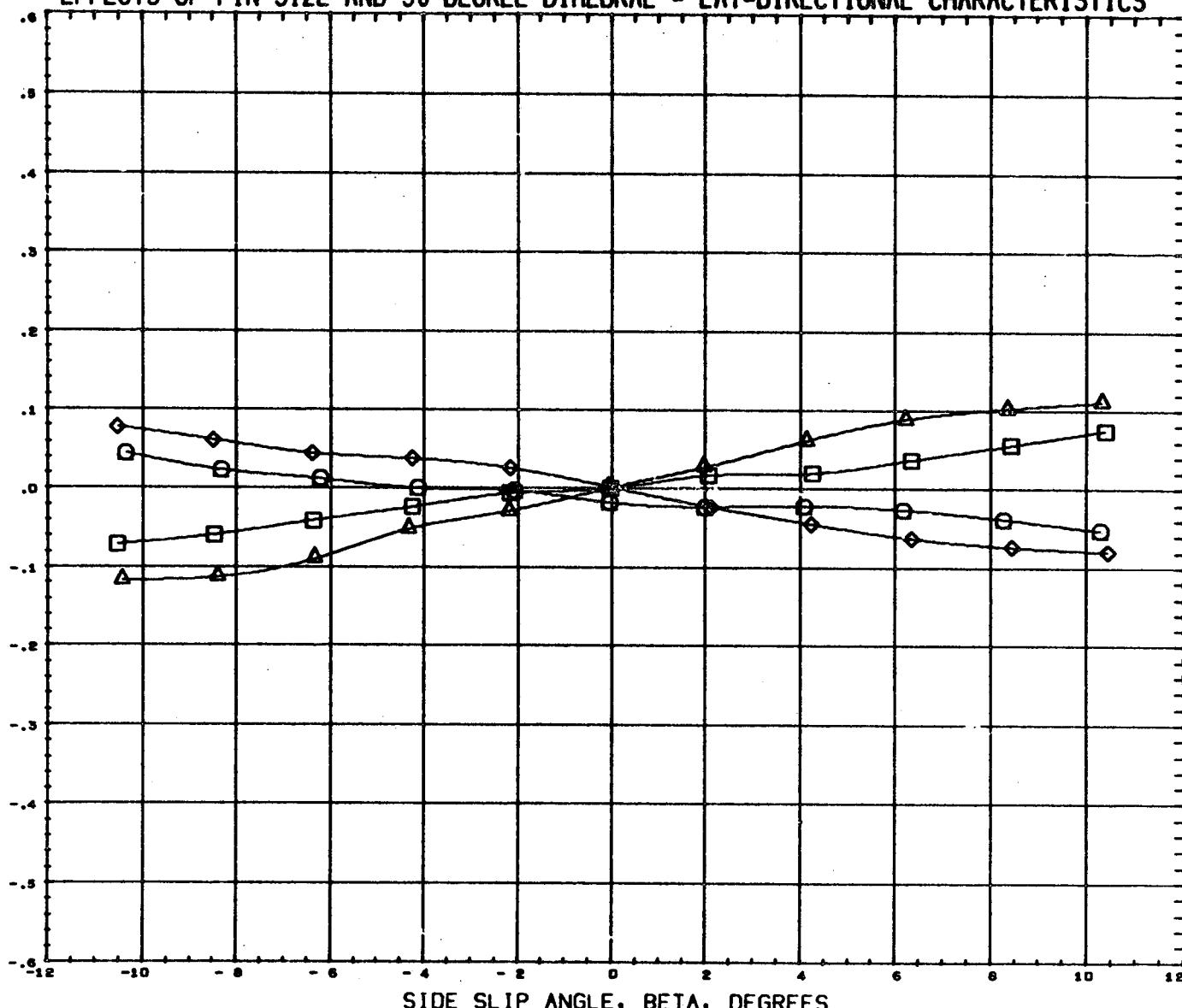
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 YMNP 0.0000 IN.
 ZMRP 0.0000 IN.
 SCALE 0.0034

MACH 0.902

EFFECTS OF FIN SIZE AND 30 DEGREE DIHEDRAL - LAT-DIRECTIONAL CHARACTERISTICS

YAWING MOMENT COEFFICIENT, CYN (BODY AXIS)



DATA SET SYMBOL CONFIGURATION DESCRIPTION

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	DIMDRL
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(S54005)	MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F2	50.000	30.000
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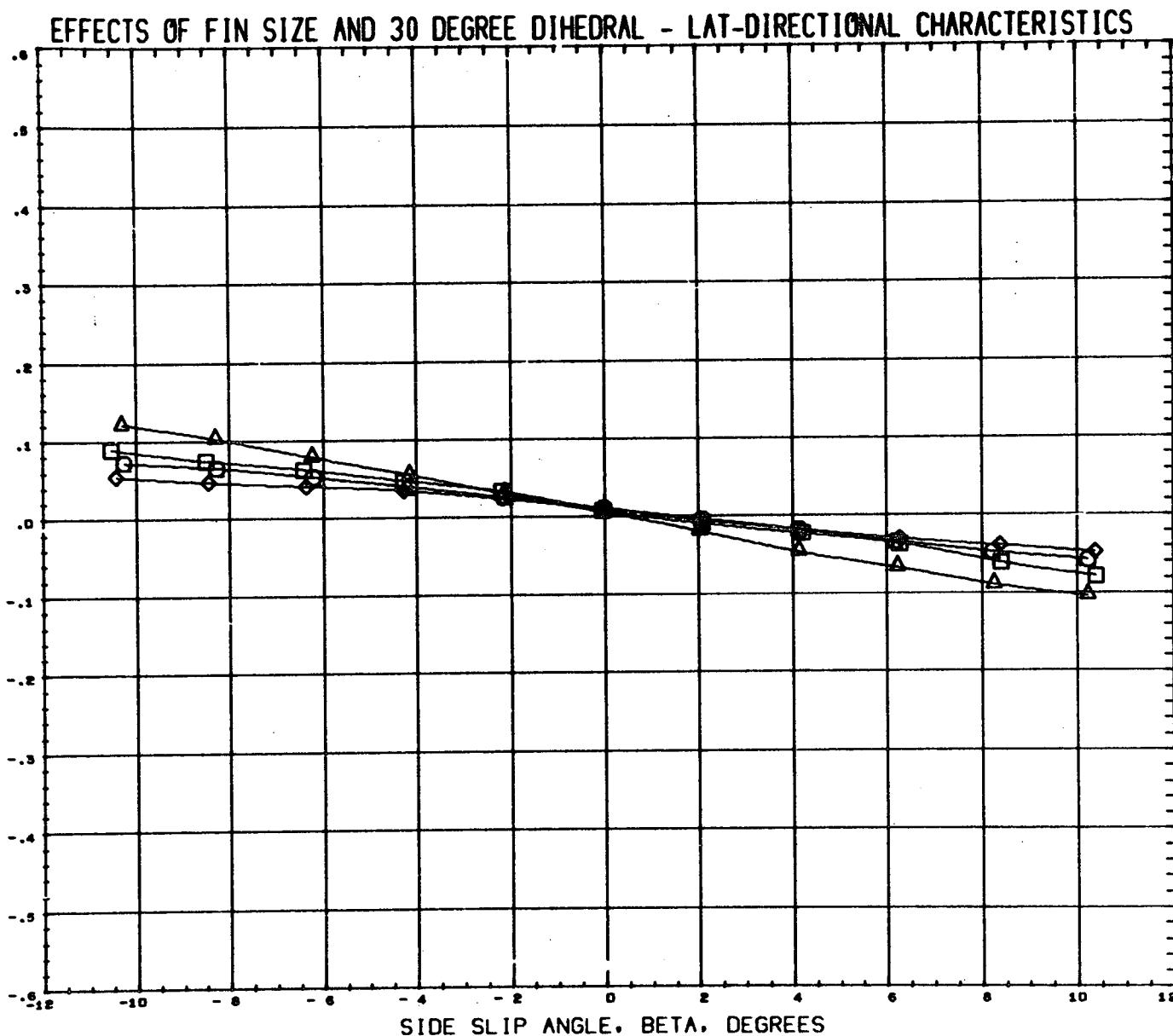
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YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

MACH 1.201

PAGE 34

ROLLING MOMENT COEFFICIENT, CBL (BODY AXIS)



DATA SET SYMBOL CONFIGURATION DESCRIPTION
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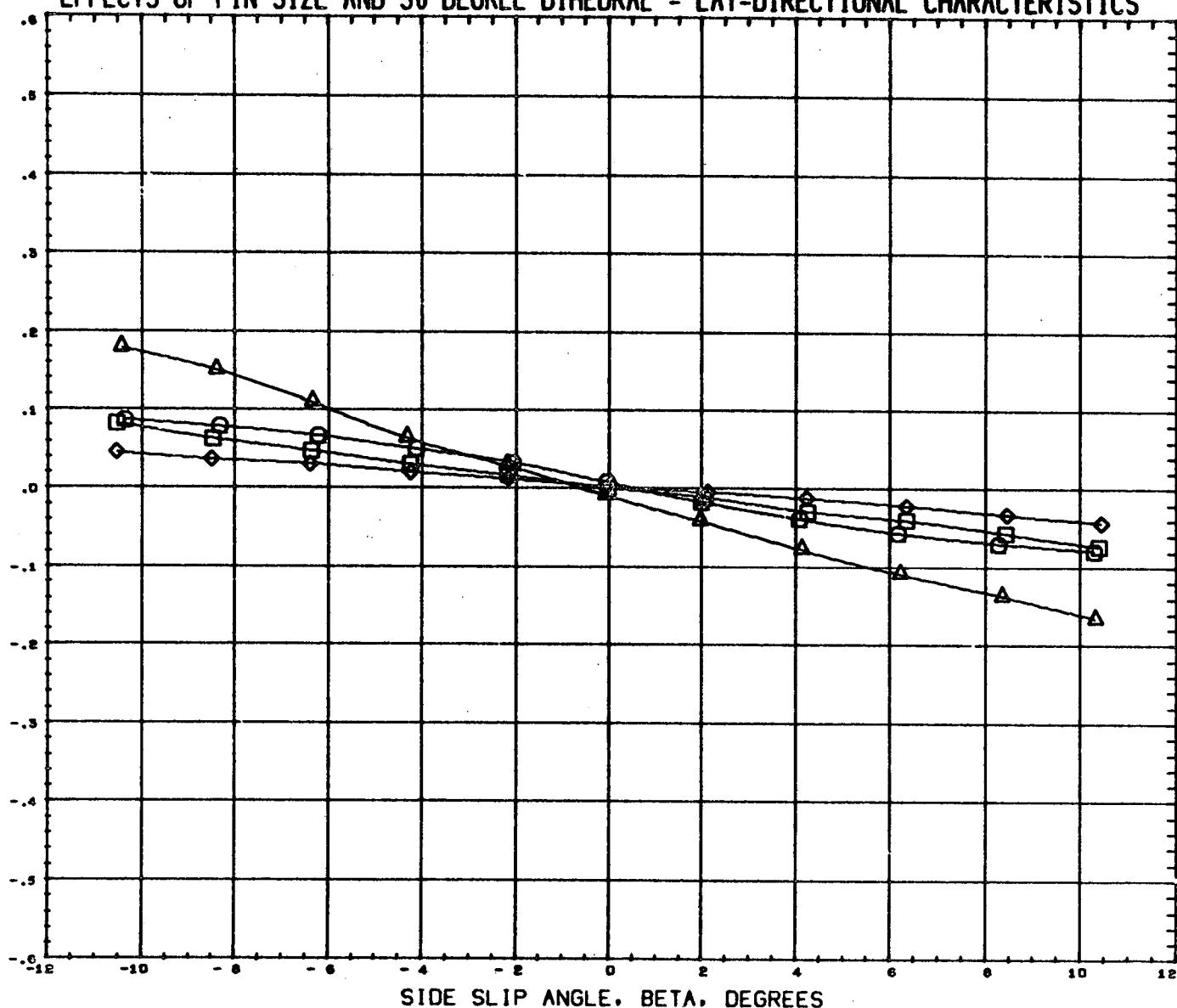
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 SCALE 0.0034

MACH 0.902

EFFECTS OF FIN SIZE AND 30 DEGREE DIHEDRAL - LAT-DIRECTIONAL CHARACTERISTICS

ROLLING MOMENT COEFFICIENT, CBL (BODY AXIS)



SIDE SLIP ANGLE, BETA, DEGREES

DATA SET SYMBOL CONFIGURATION DESCRIPTION

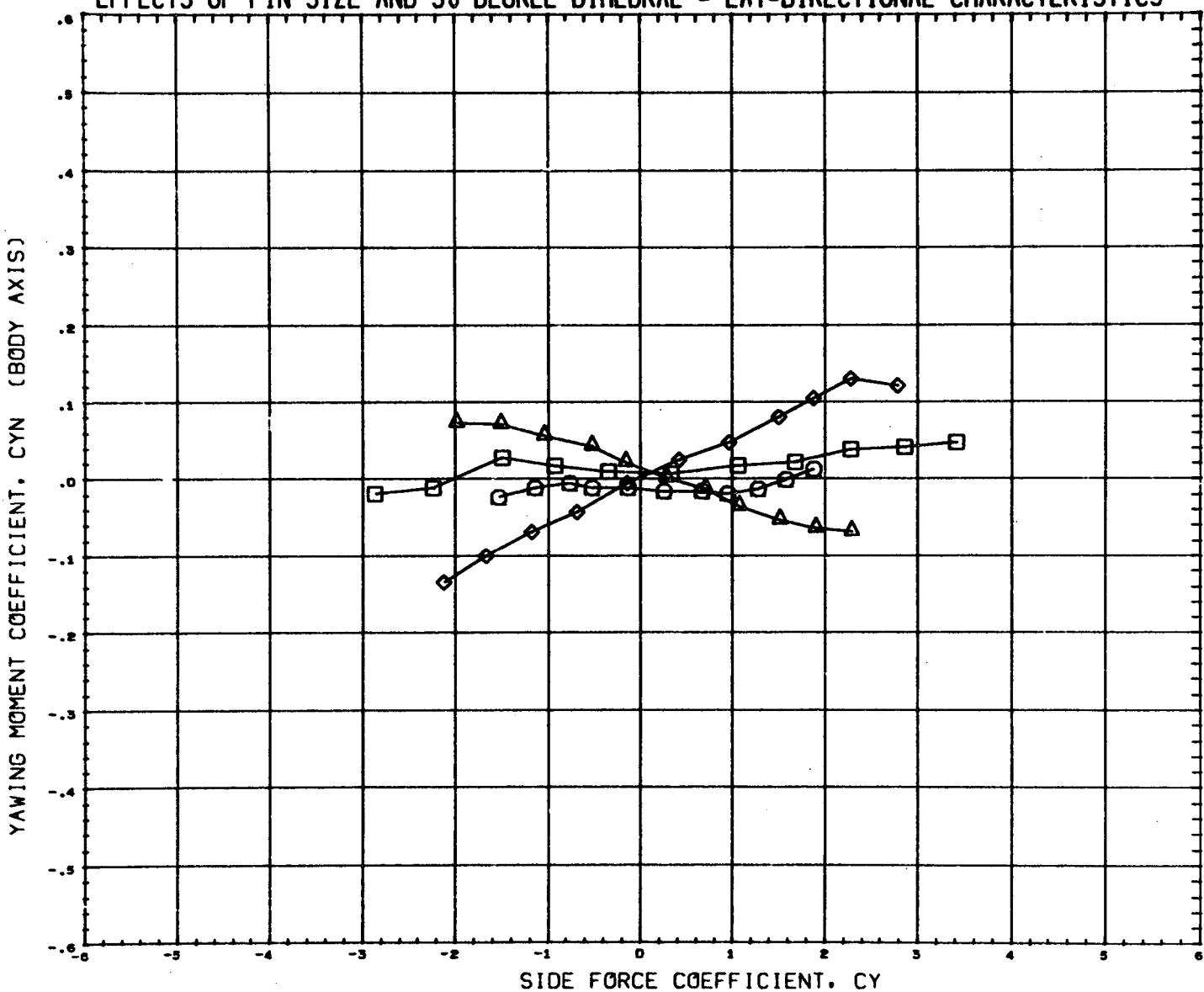
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ALPHA DIHDRL
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MACH 1.201

EFFECTS OF FIN SIZE AND 30 DEGREE DIHEDRAL - LAT-DIRECTIONAL CHARACTERISTICS



DATA SET SYMBOL CONFIGURATION DESCRIPTION

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 (S54009) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6

ALPHA DIHDRL

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 50.000 30.000
 50.000 30.000

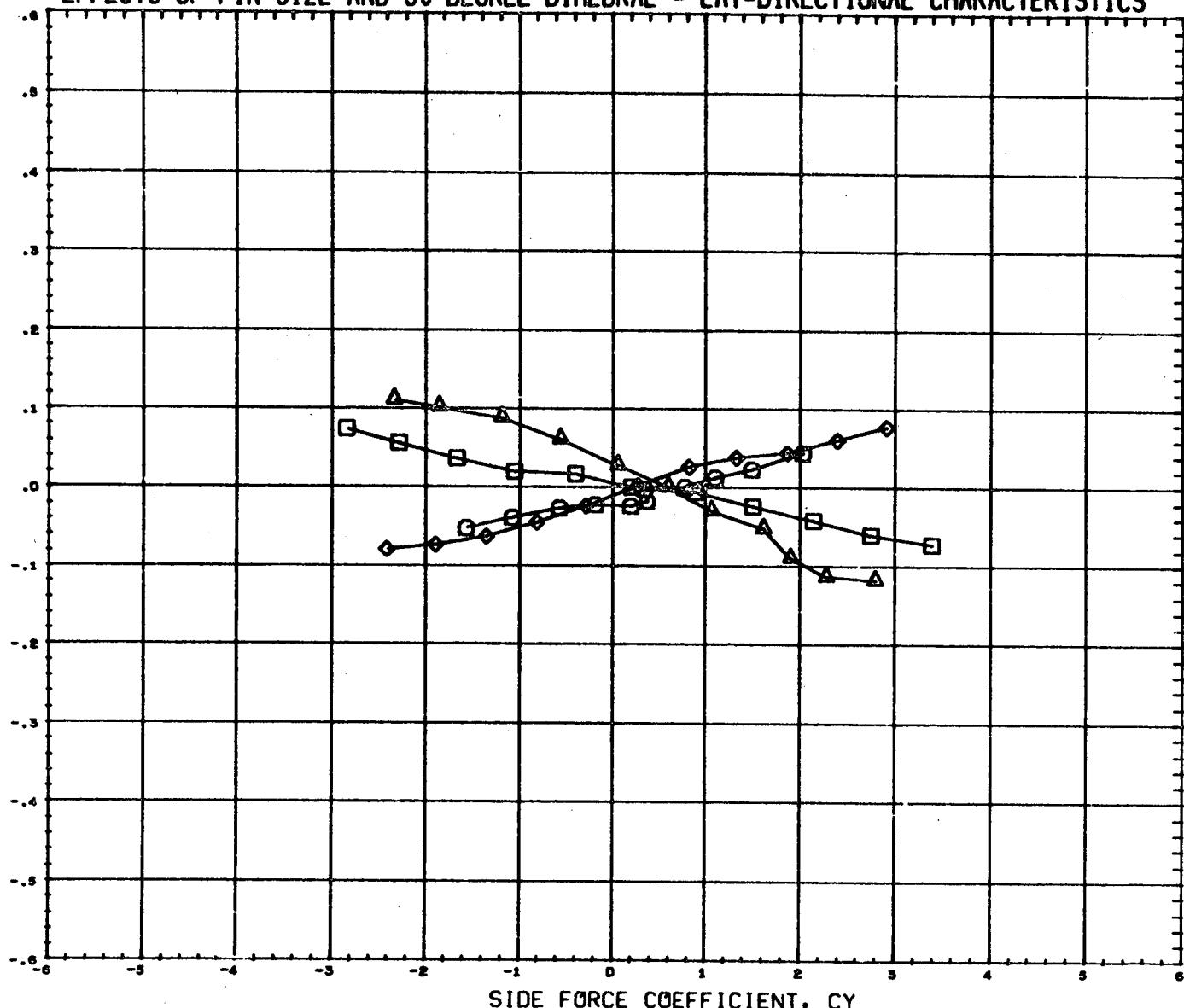
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 SCALE 0.0034

MACH 0.902

EFFECTS OF FIN SIZE AND 30 DEGREE DIHEDRAL - LAT-DIRECTIONAL CHARACTERISTICS

YAWING MOMENT COEFFICIENT, CYN (BODY AXIS)



SIDE FORCE COEFFICIENT, CY

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(K54006)	Q	MSFC 518	MSFC PRESSURE FED BOOSTER	N1B1F2
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(S54005)	D	MSFC 518	MSFC PRESSURE FED BOOSTER	N1B1F2
(S54009)	C	MSFC 518	MSFC PRESSURE FED BOOSTER	N1B1F6

ALPHA DIHEDR

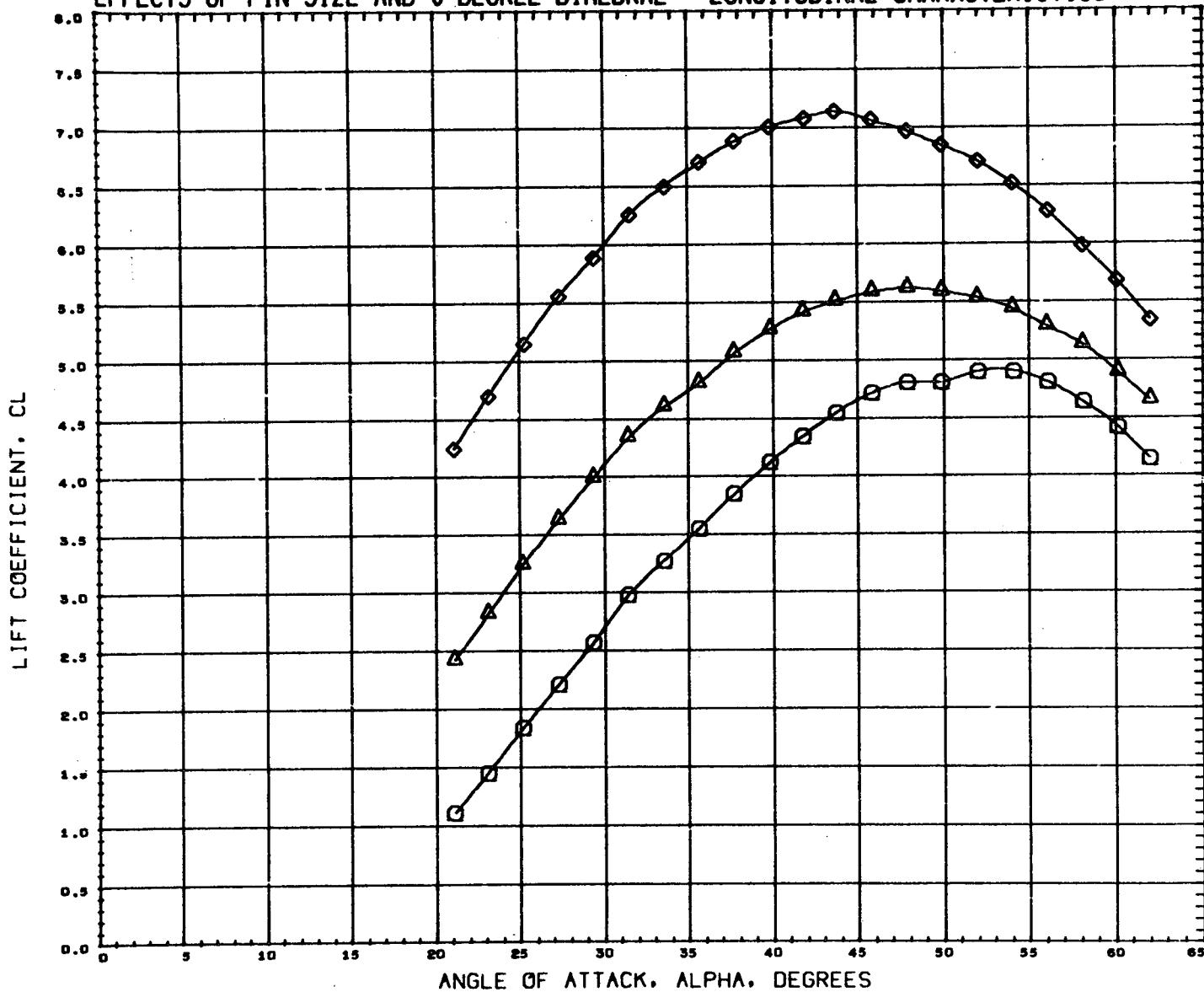
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BREF	7.2230	IN.
XMRP	4.3340	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

MACH 1.201

EFFECTS OF FIN SIZE AND 0 DEGREE DIHEDRAL - LONGITUDINAL CHARACTERISTICS



DATA SET SYMBOL CONFIGURATION DESCRIPTION

(MS4901) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1
 (IS4911) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F2
 (KS4914) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6

BETA DIHDRL

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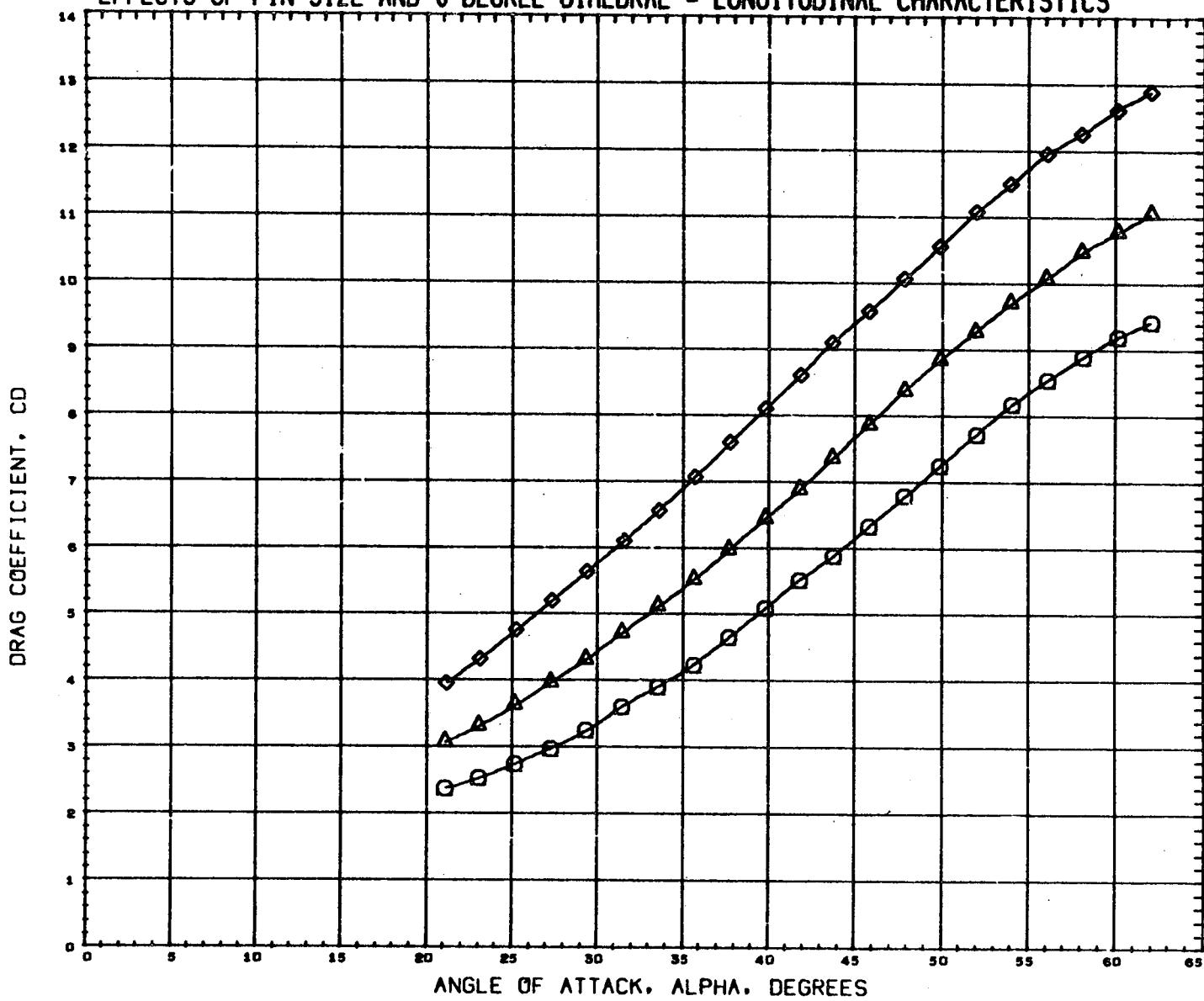
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BREF 7.2230 IN.
XMRP 4.3340 IN.
YMRP 0.0000 IN.
ZMRP 0.0000 IN.
SCALE 0.0034

MACH 1.200

PAGE 39

EFFECTS OF FIN SIZE AND 0 DEGREE DIHEDRAL - LONGITUDINAL CHARACTERISTICS



DATA SET SYMBOL CONFIGURATION DESCRIPTION

(MSFC 518) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1
(MSFC 518) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F2
(K54914) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6

BETA DIHDL

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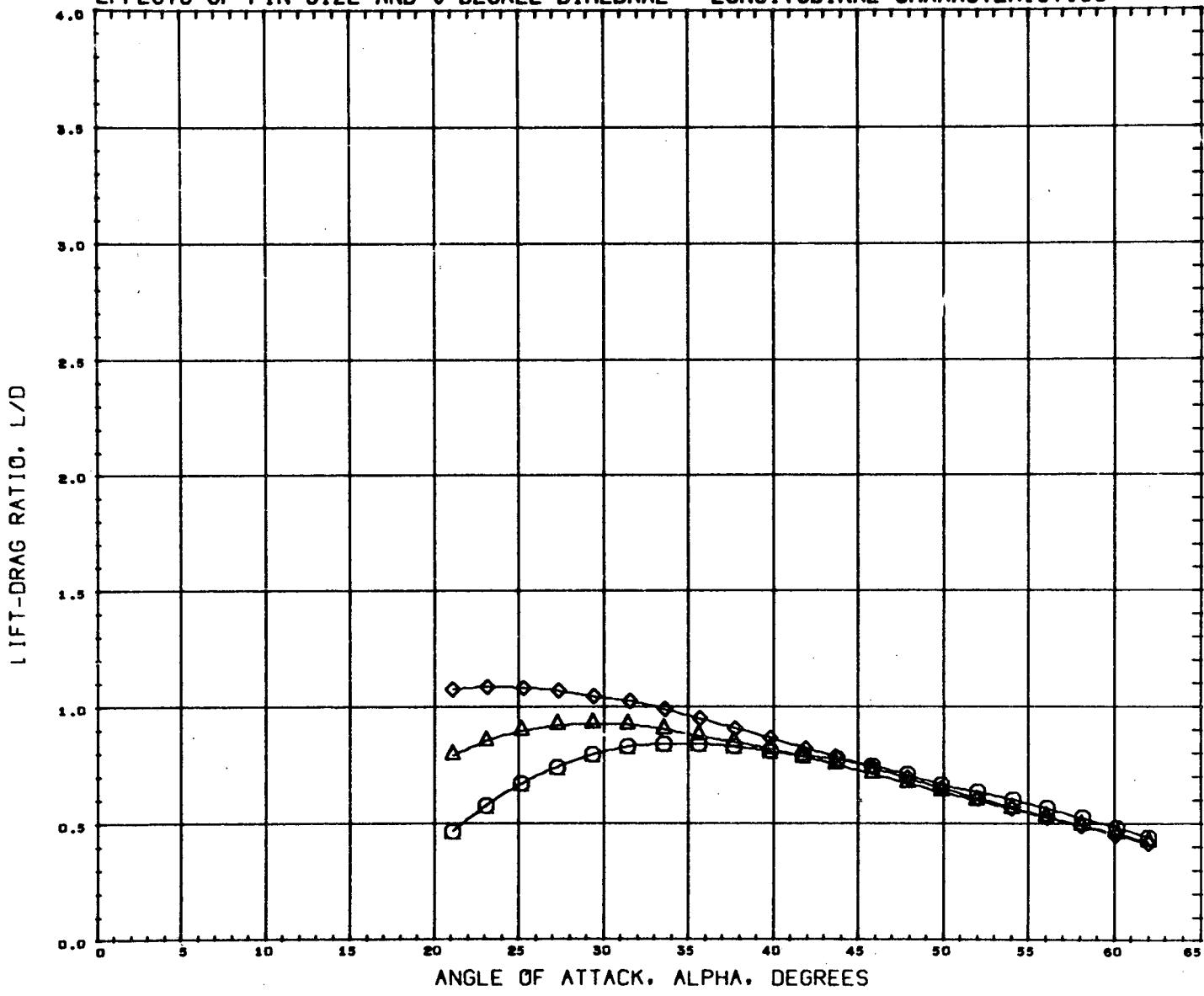
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YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

MACH 1.200

PAGE 40

EFFECTS OF FIN SIZE AND 0 DEGREE DIHEDRAL - LONGITUDINAL CHARACTERISTICS



DATA SET SYMBOL CONFIGURATION DESCRIPTION

(M54901) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1
 (K54911) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F2
 (K54914) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6

BETA DIHDRL

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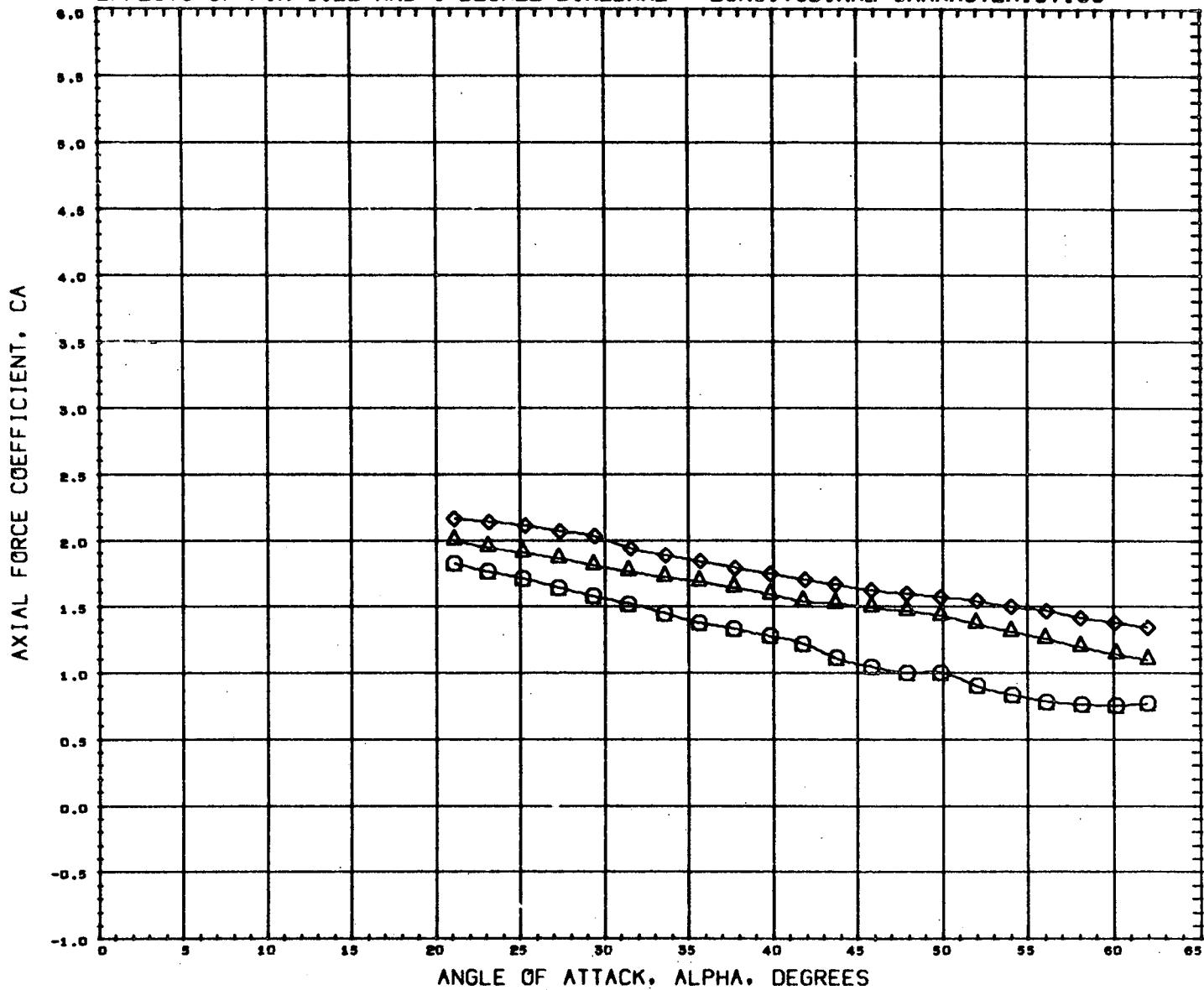
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 SCALE 0.0034

MACH 1.200

PAGE 41

EFFECTS OF FIN SIZE AND 0 DEGREE DIHEDRAL - LONGITUDINAL CHARACTERISTICS



DATA SET SYMBOL CONFIGURATION DESCRIPTION

(IN549D1) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1
 (IN54911) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F2
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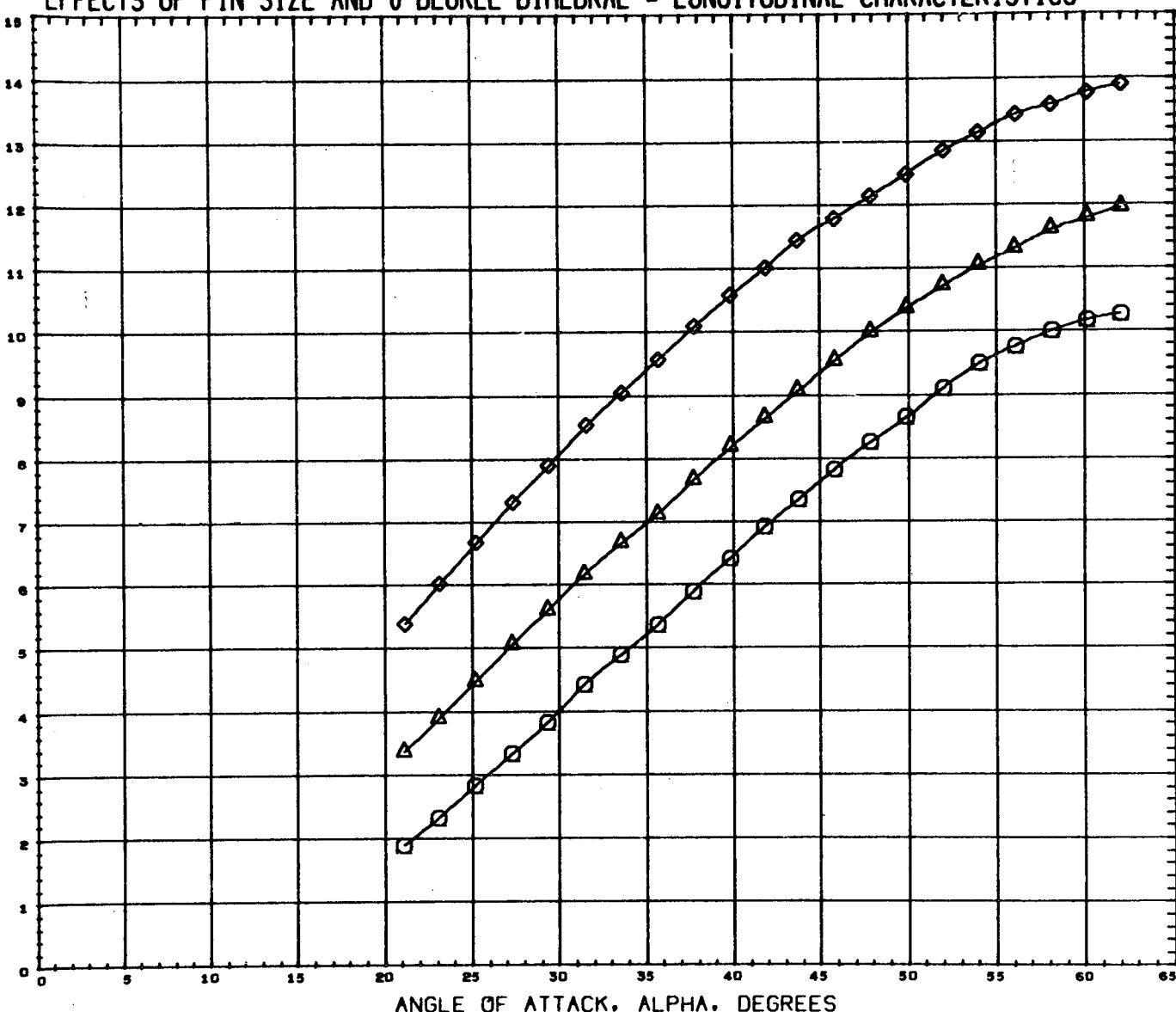
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 SCALE 0.0034

MACH 1.200

EFFECTS OF FIN SIZE AND 0 DEGREE DIHEDRAL - LONGITUDINAL CHARACTERISTICS

NORMAL FORCE COEFFICIENT, CN



ANGLE OF ATTACK, ALPHA, DEGREES

DATA SET SYMBOL CONFIGURATION DESCRIPTION
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 (IS4911) \triangle MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F2
 (KS4914) \diamond MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6

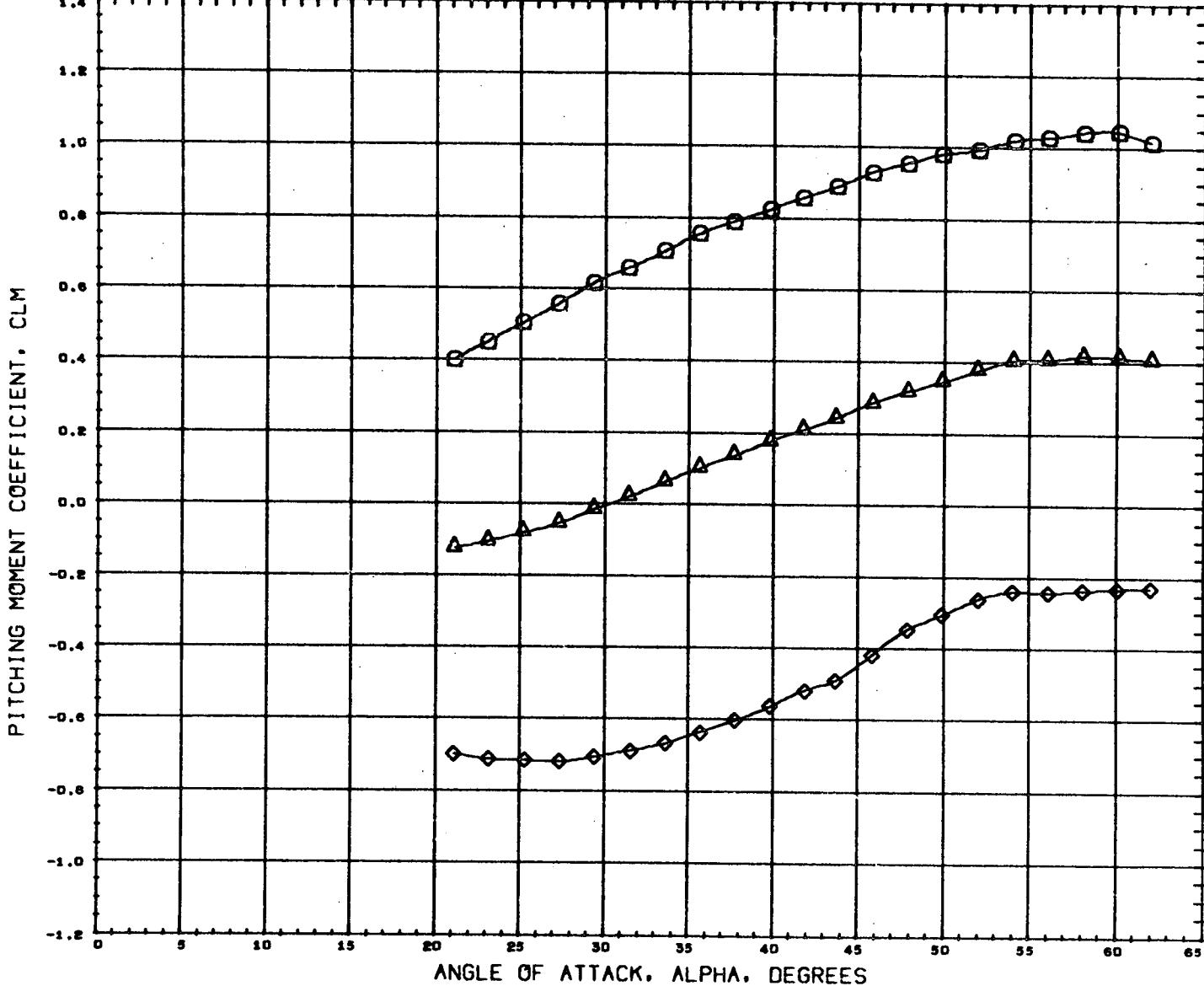
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 YMRP 0.0000 IN.
 ZMRP 0.0000 IN.
 SCALE 0.0034

MACH 1.200

PAGE 43

EFFECTS OF FIN SIZE AND 0 DEGREE DIHEDRAL - LONGITUDINAL CHARACTERISTICS



DATA SET SYMBOL CONFIGURATION DESCRIPTION

(N54901) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1
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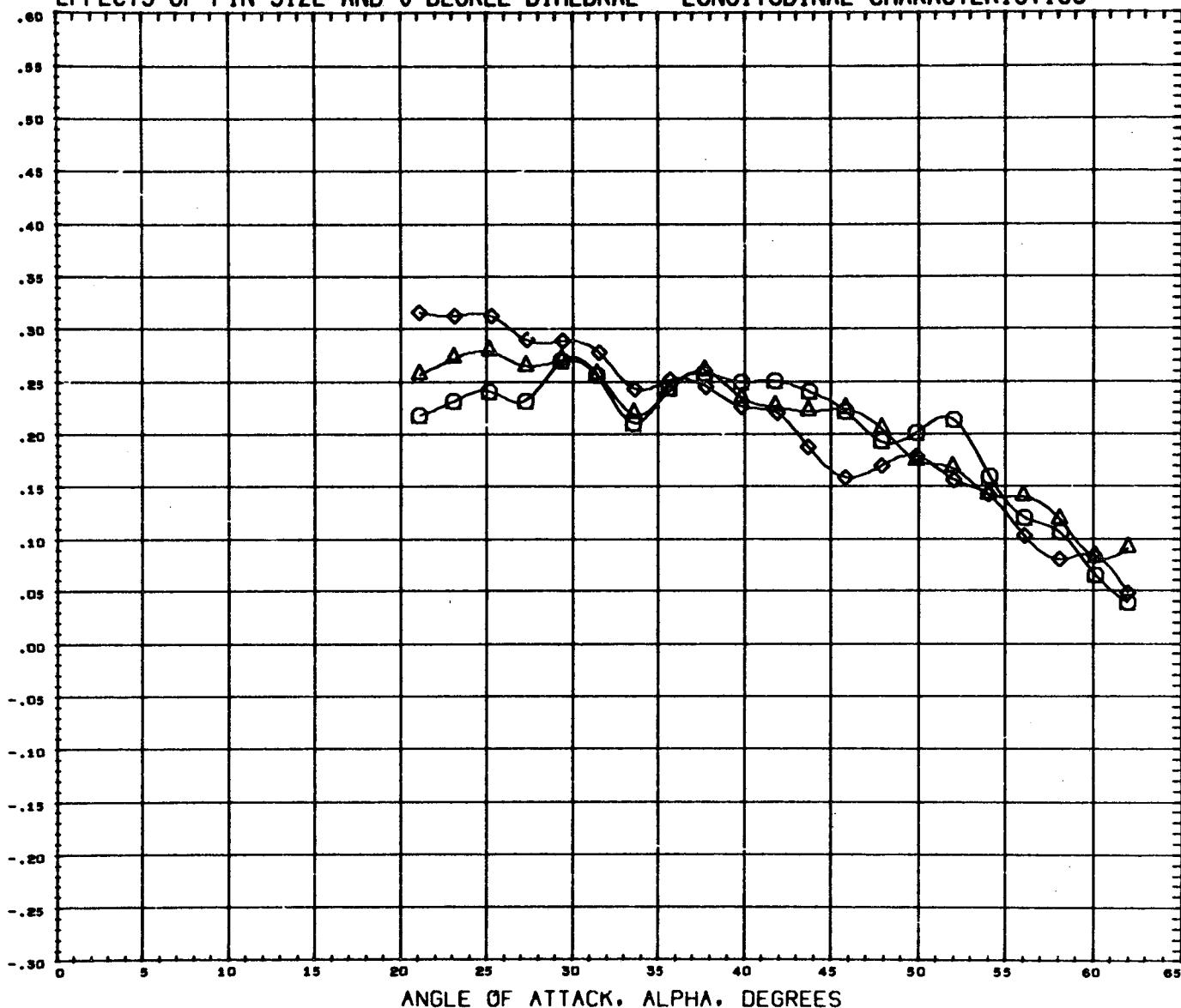
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 SCALE 0.0034

MACH 1.200

EFFECTS OF FIN SIZE AND 0 DEGREE DIHEDRAL - LONGITUDINAL CHARACTERISTICS

LOCAL NORMAL FORCE COEFFICIENT SLOPE, CN/A. PER DEGREE



DATA SET SYMBOL CONFIGURATION DESCRIPTION

(K54911) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1
 (MSFC 518) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F2
 (K54914) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6

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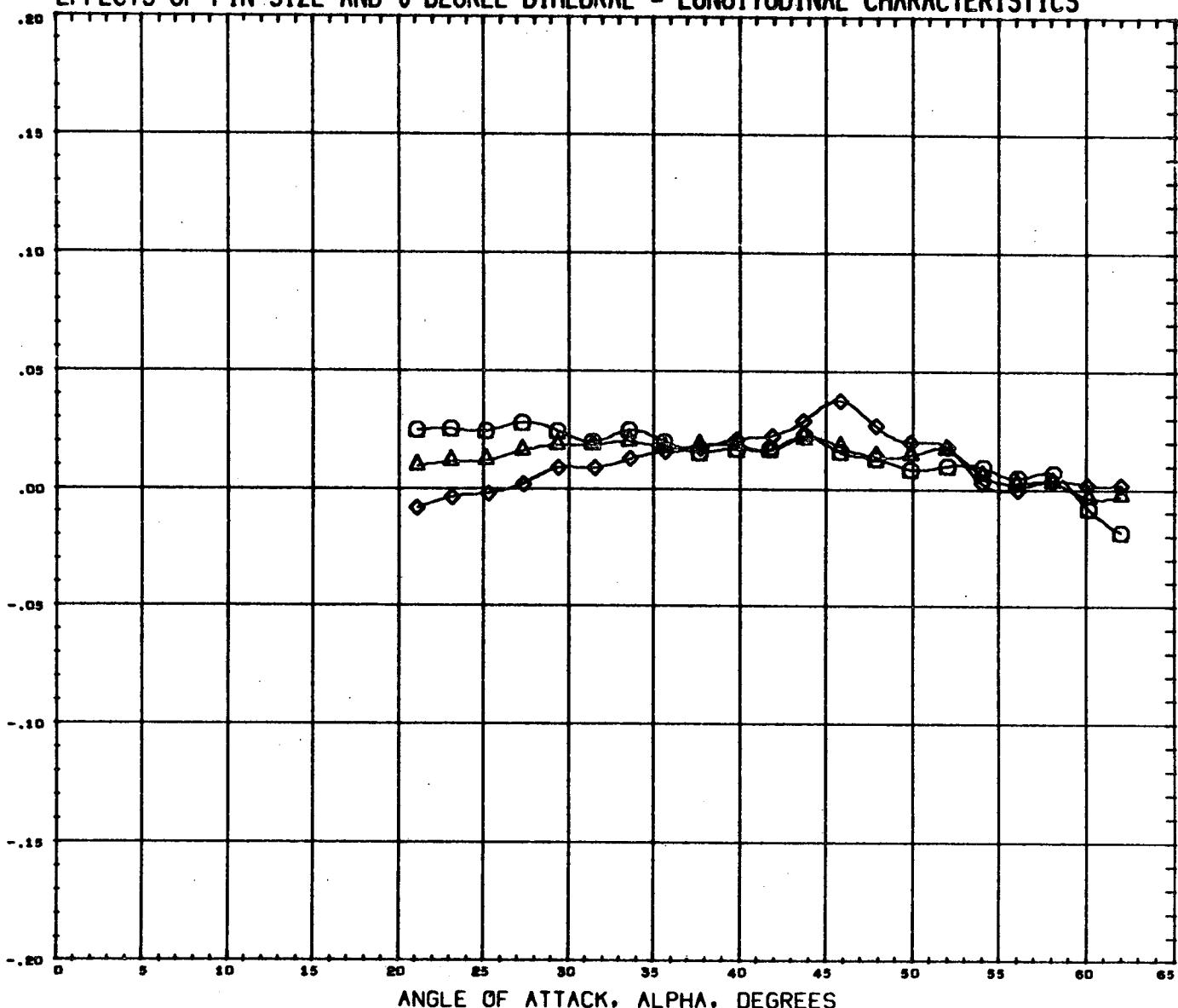
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 YMRF 0.0000 IN.
 ZMRF 0.0000 IN.
 SCALE 0.0034

MACH 1.200

PAGE 45

EFFECTS OF FIN SIZE AND 0 DEGREE DIHEDRAL - LONGITUDINAL CHARACTERISTICS

LOCAL PITCHING MOMENT COEFFICIENT SLOPE, CLM/A, PER DEGREE



DATA SET SYMBOL CONFIGURATION DESCRIPTION

(M549D1) O MSFC 518 MSFC PRESSURE FED BOOSTER N1B1
 (I54911) A MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F2
 (K54914) D MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6

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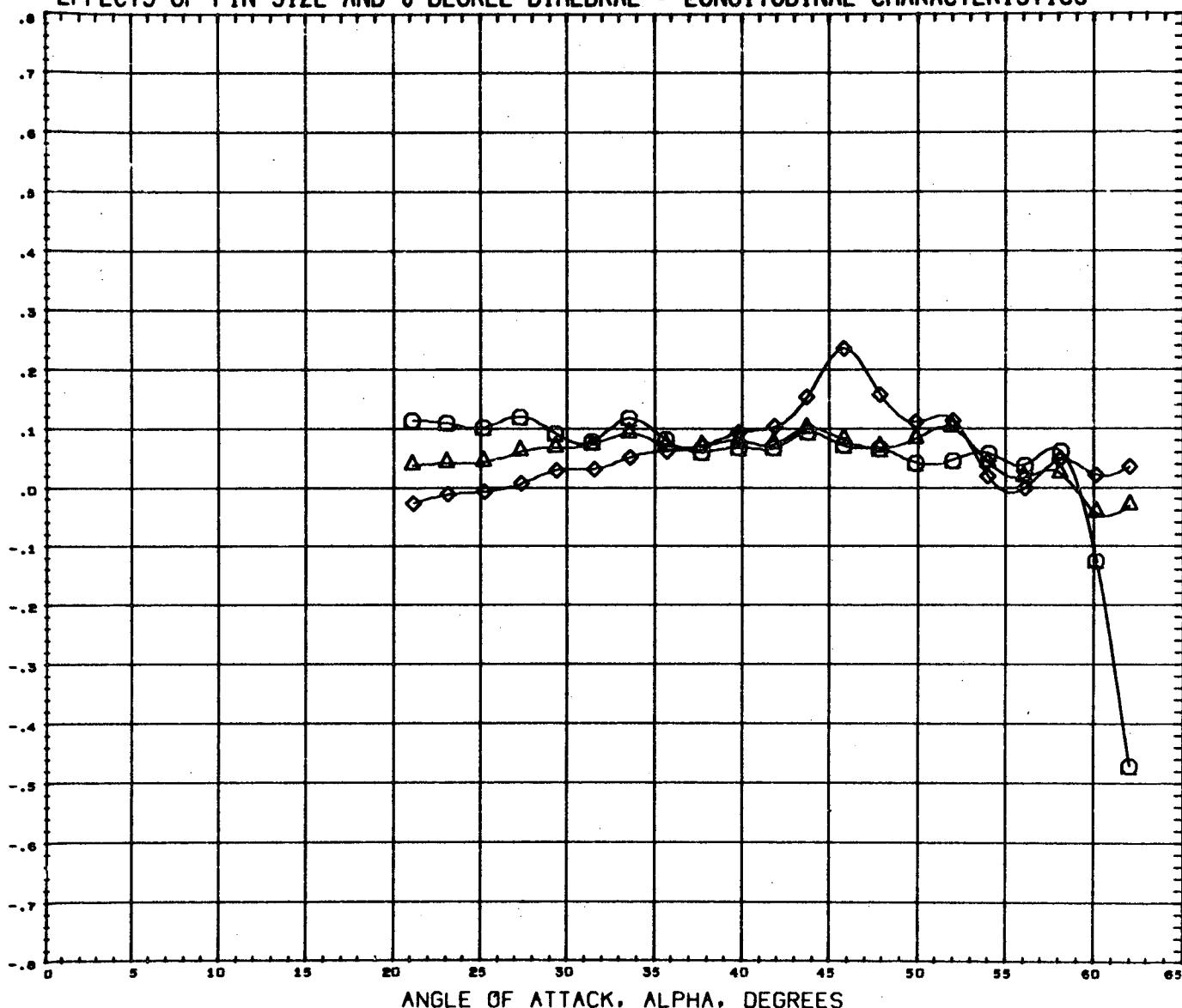
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 ZMRP 0.0000 IN.
 SCALE 0.0034

MACH 1.200

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EFFECTS OF FIN SIZE AND 0 DEGREE DIHEDRAL - LONGITUDINAL CHARACTERISTICS

LOCAL CENTER OF PRESSURE, XAC = CLM/A / CNA



DATA SET SYMBOL CONFIGURATION DESCRIPTION

(N54901) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1
 (J54911) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F2
 (L54914) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6

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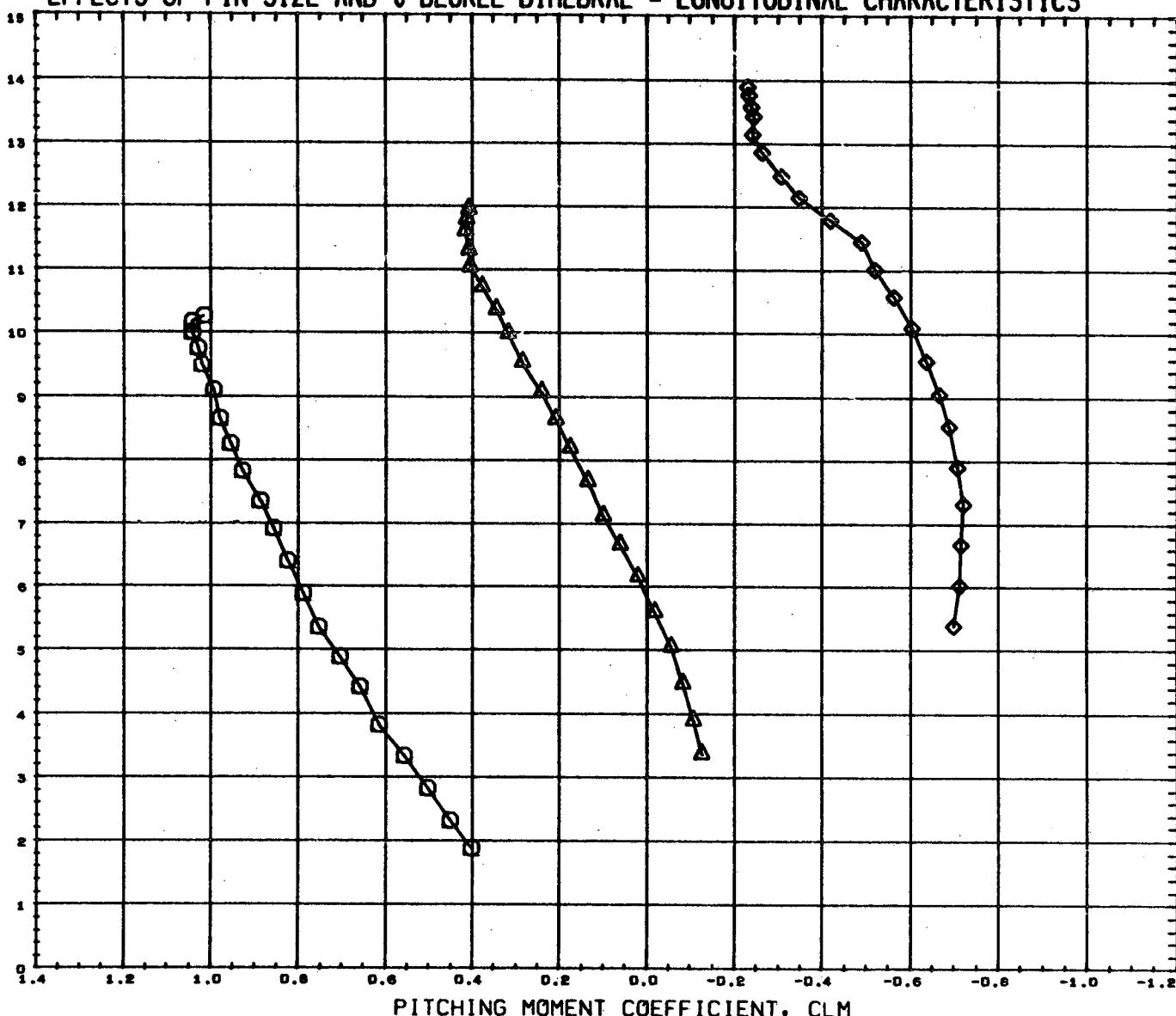
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 ZMRF 0.0000 IN.
 SCALE 0.0034

MACH 1.200

PAGE 47

EFFECTS OF FIN SIZE AND 0 DEGREE DIHEDRAL - LONGITUDINAL CHARACTERISTICS

NORMAL FORCE COEFFICIENT, CN



PITCHING MOMENT COEFFICIENT, CLM

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(N54901) Q MSFC 518 MSFC PRESSURE FED BOOSTER N1B1
 (154911) Q MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F2
 (K54914) D MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6

BETA DIHDRL

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REFERENCE INFORMATION

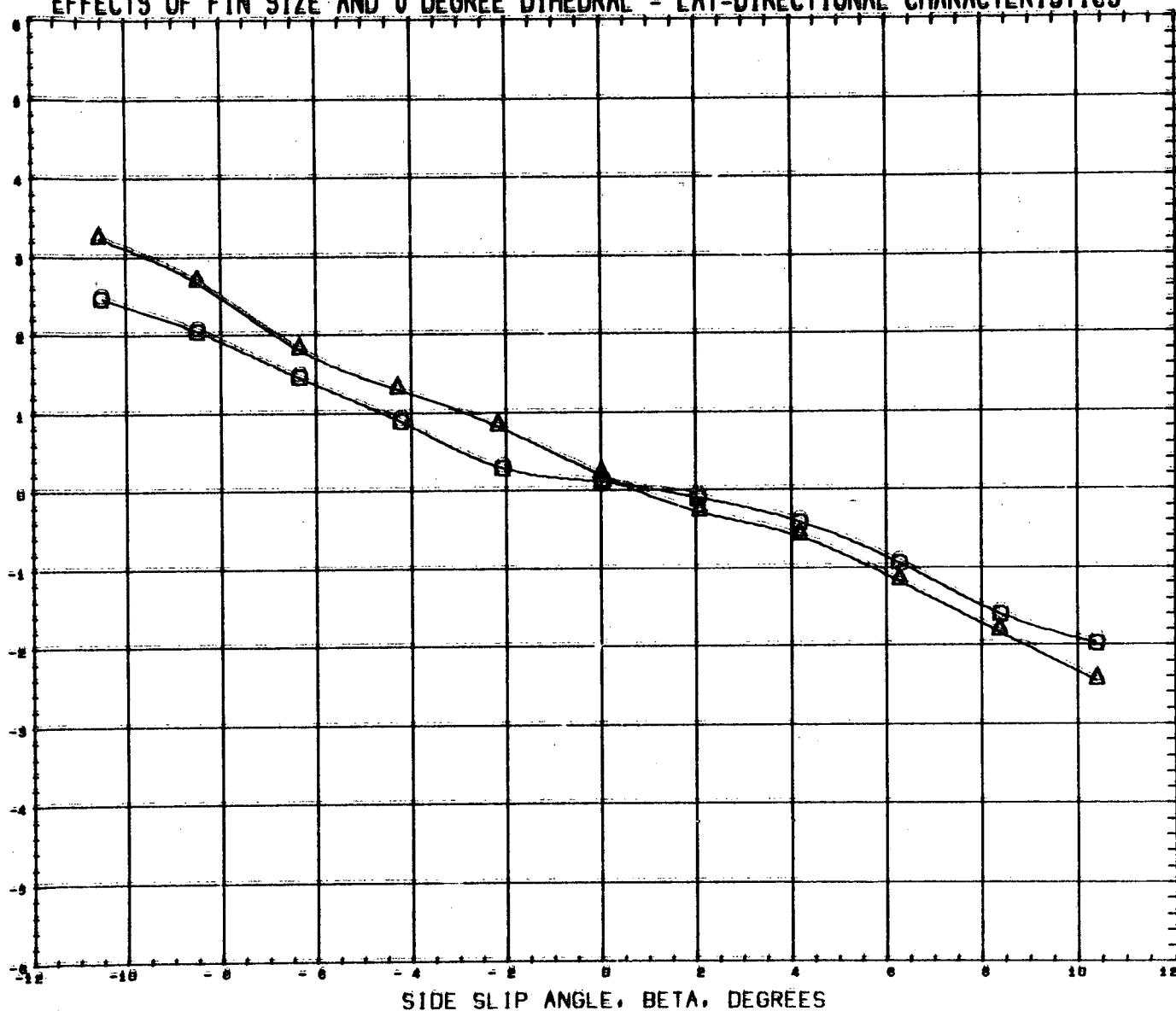
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 BREF 7.2230 IN.
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 YMKP 0.0000 IN.
 ZMKP 0.0000 IN.
 SCALE 0.0034

MACH 1.200

PAGE 48

EFFECTS OF FIN SIZE AND 0 DEGREE DIHEDRAL - LAT-DIRECTIONAL CHARACTERISTICS

SIDE FORCE COEFFICIENT, C_y



DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (554013) MSFC 918 MSFC PRESSURE FED BOOSTER N1B1F0F3
 (554016) MSFC 918 MSFC PRESSURE FED BOOSTER N1B1F0F4

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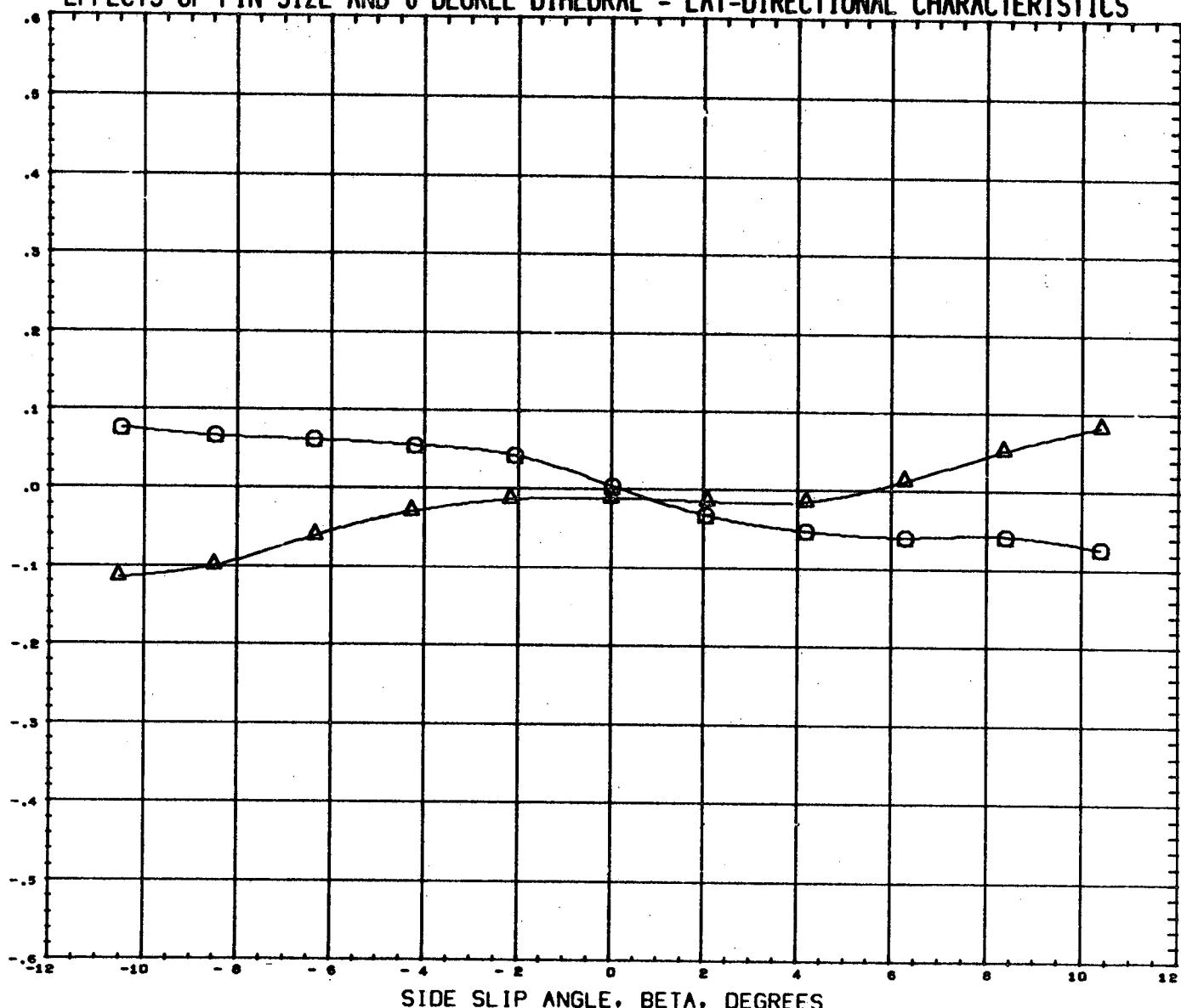
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 ZMRP 0.0000 IN.
 SCALE 0.0034

MACH 1.202

PAGE 49

EFFECTS OF FIN SIZE AND 0 DEGREE DIHEDRAL - LAT-DIRECTIONAL CHARACTERISTICS

YAWING MOMENT COEFFICIENT, CYN (BODY AXIS)



SIDE SLIP ANGLE, BETA, DEGREES

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(S54013) Q MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F2F3
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30.000 0.000

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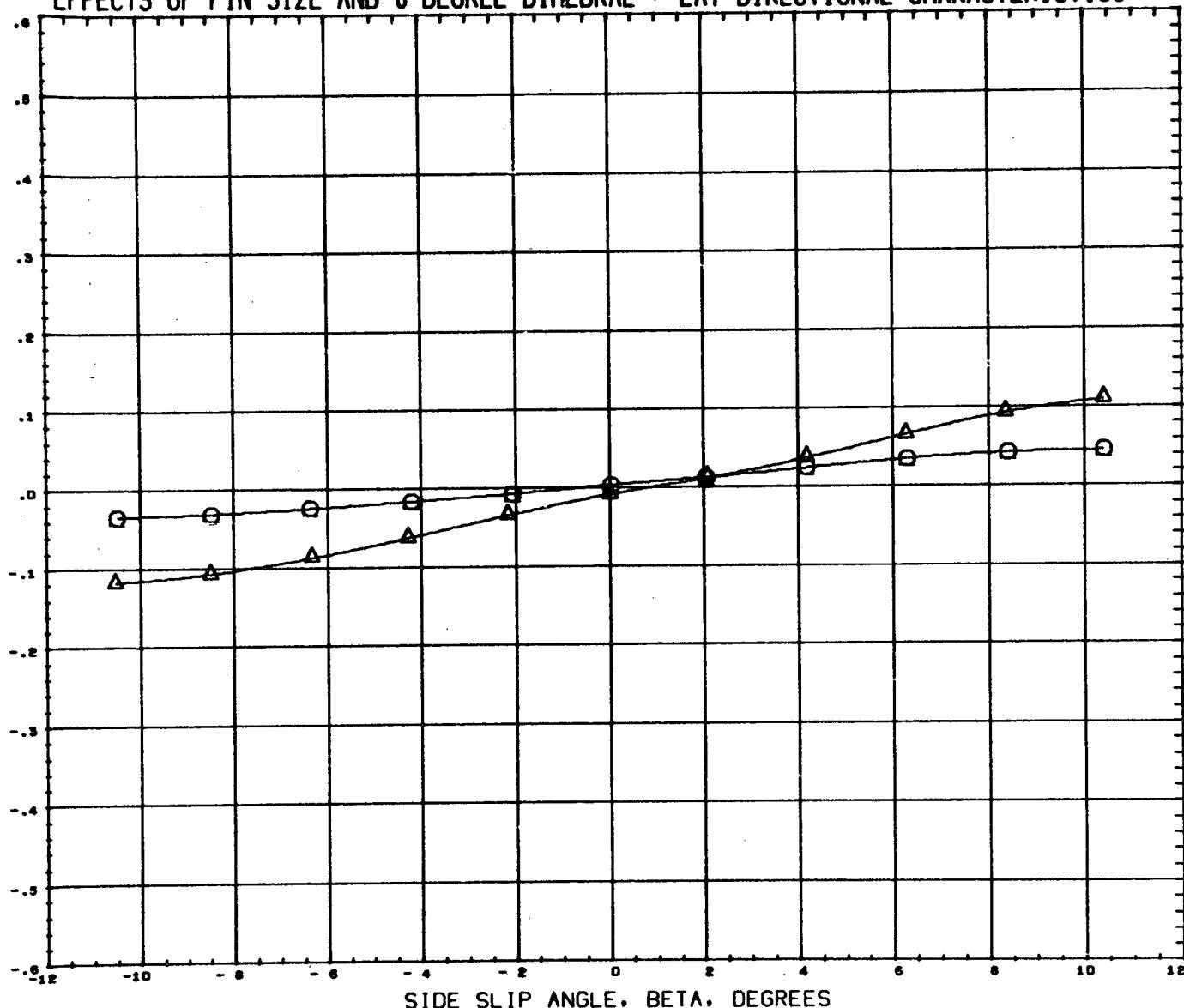
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YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

MACH 1.202

PAGE 50

EFFECTS OF FIN SIZE AND 0 DEGREE DIHEDRAL - LAT-DIRECTIONAL CHARACTERISTICS

ROLLING MOMENT COEFFICIENT, CBL (BODY AXIS)



DATA SET SYMBOL CONFIGURATION DESCRIPTION

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(554016) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6F4

ALPHA DHDRL

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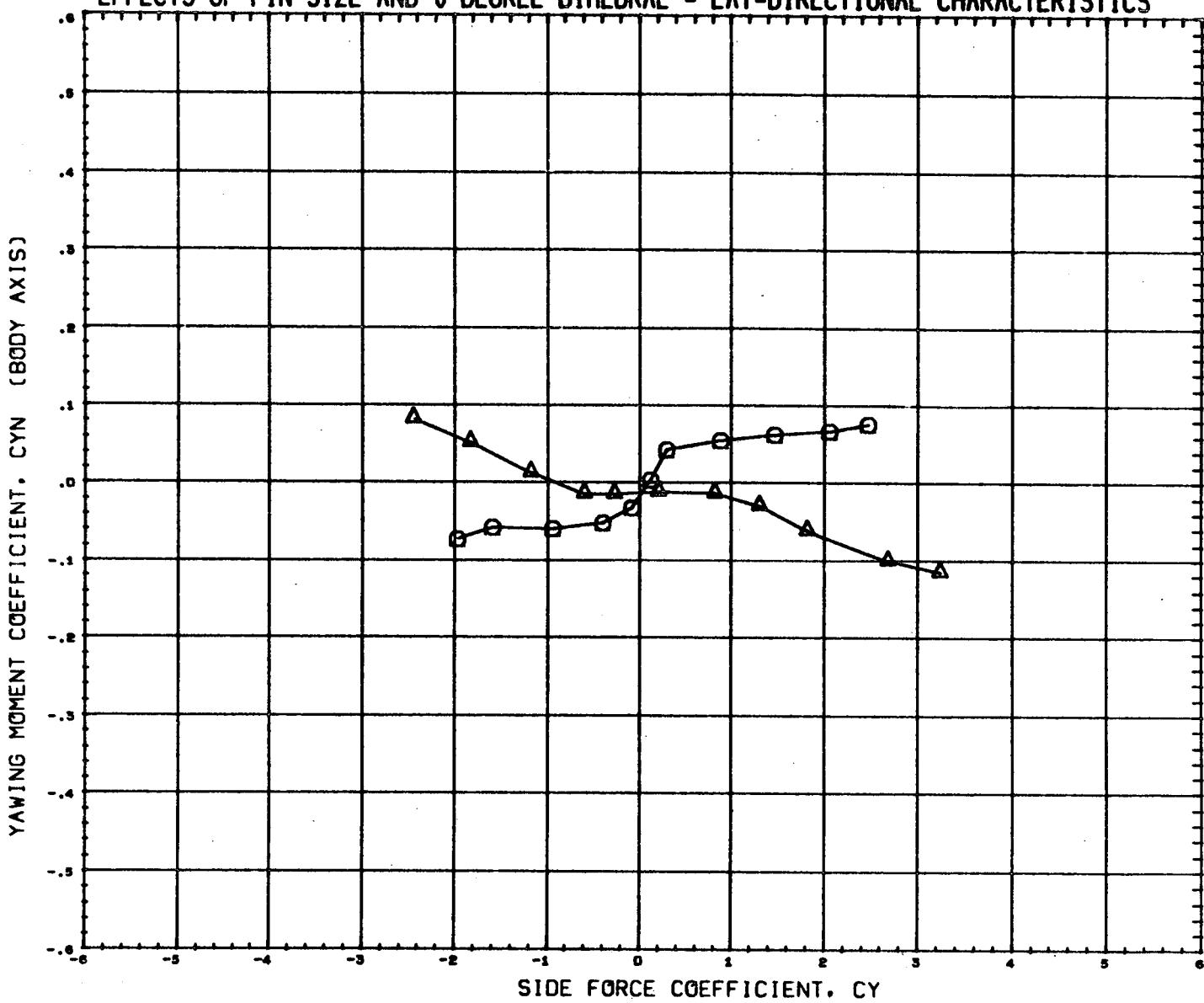
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ZMRP 0.0000 IN.
SCALE 0.0034

MACH 1.202

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EFFECTS OF FIN SIZE AND 0 DEGREE DIHEDRAL - LAT-DIRECTIONAL CHARACTERISTICS



DATA SET SYMBOL CONFIGURATION DESCRIPTION
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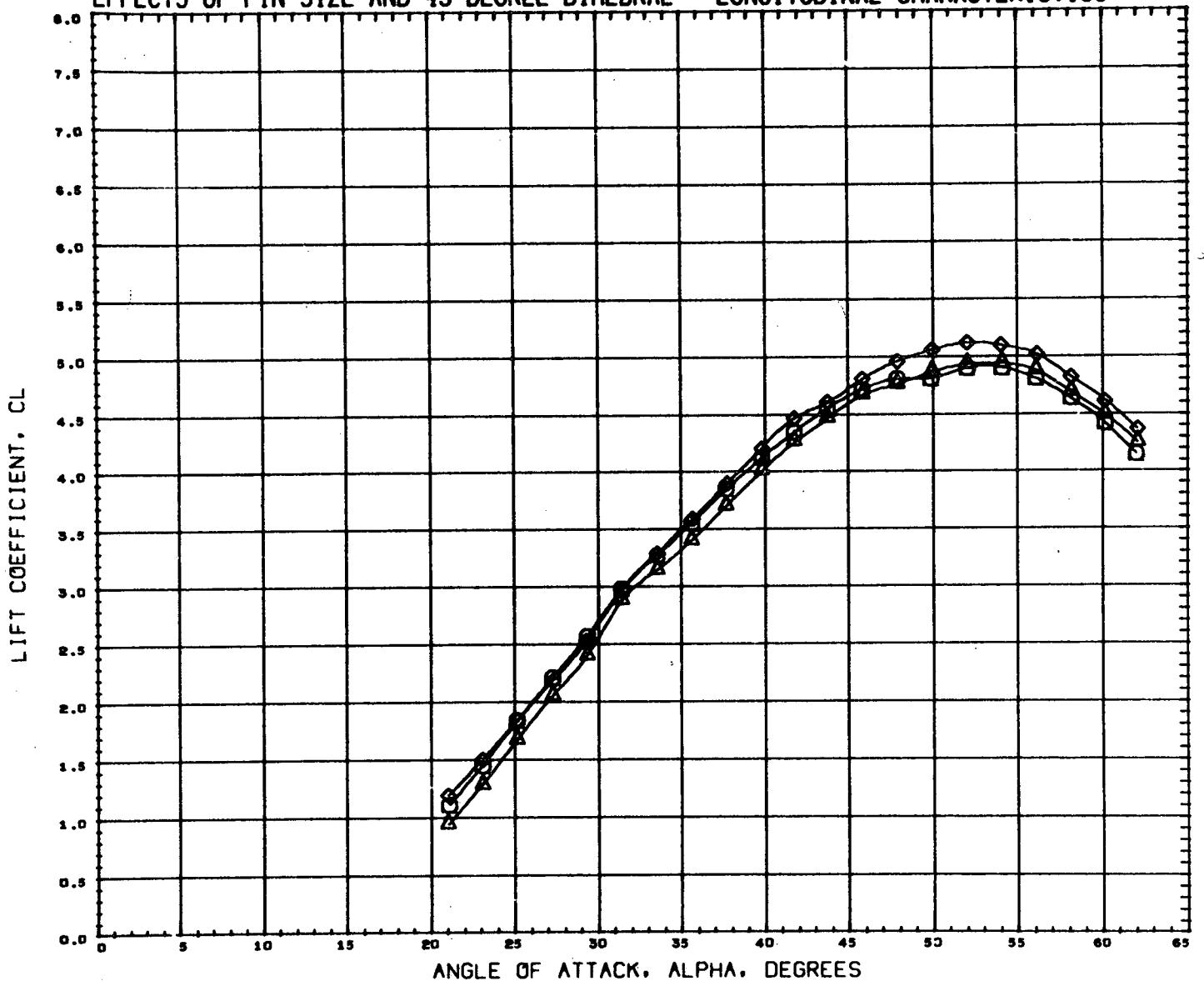
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 YMNP 0.0000 IN.
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 SCALE 0.0034

MACH 1.202

PAGE 52

EFFECTS OF FIN SIZE AND 45 DEGREE DIHEDRAL - LONGITUDINAL CHARACTERISTICS



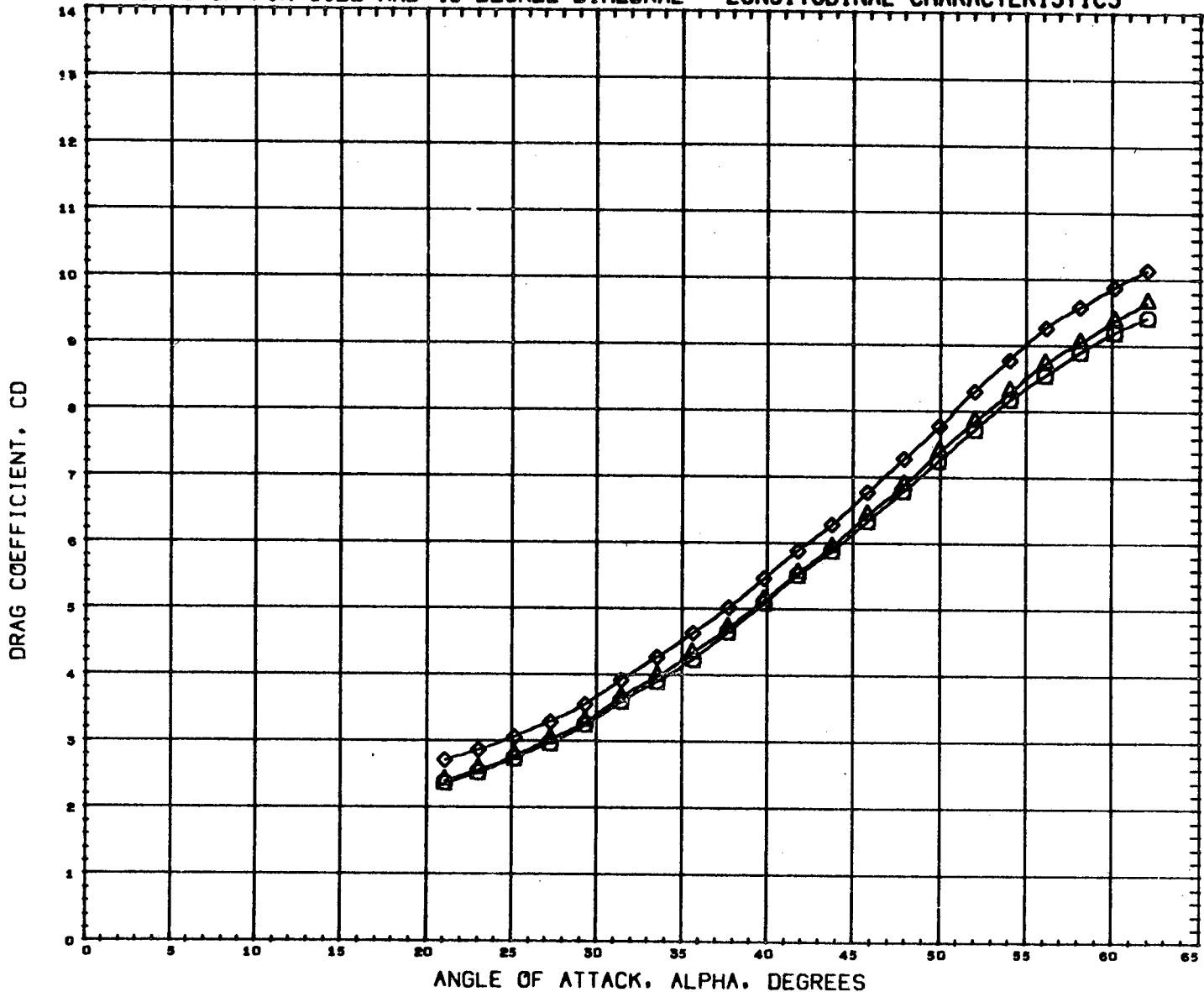
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BETA DIMDRL
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REFERENCE INFORMATION
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MACH 1.200

EFFECTS OF FIN SIZE AND 45 DEGREE DIHEDRAL - LONGITUDINAL CHARACTERISTICS



DATA SET SYMBOL CONFIGURATION DESCRIPTION

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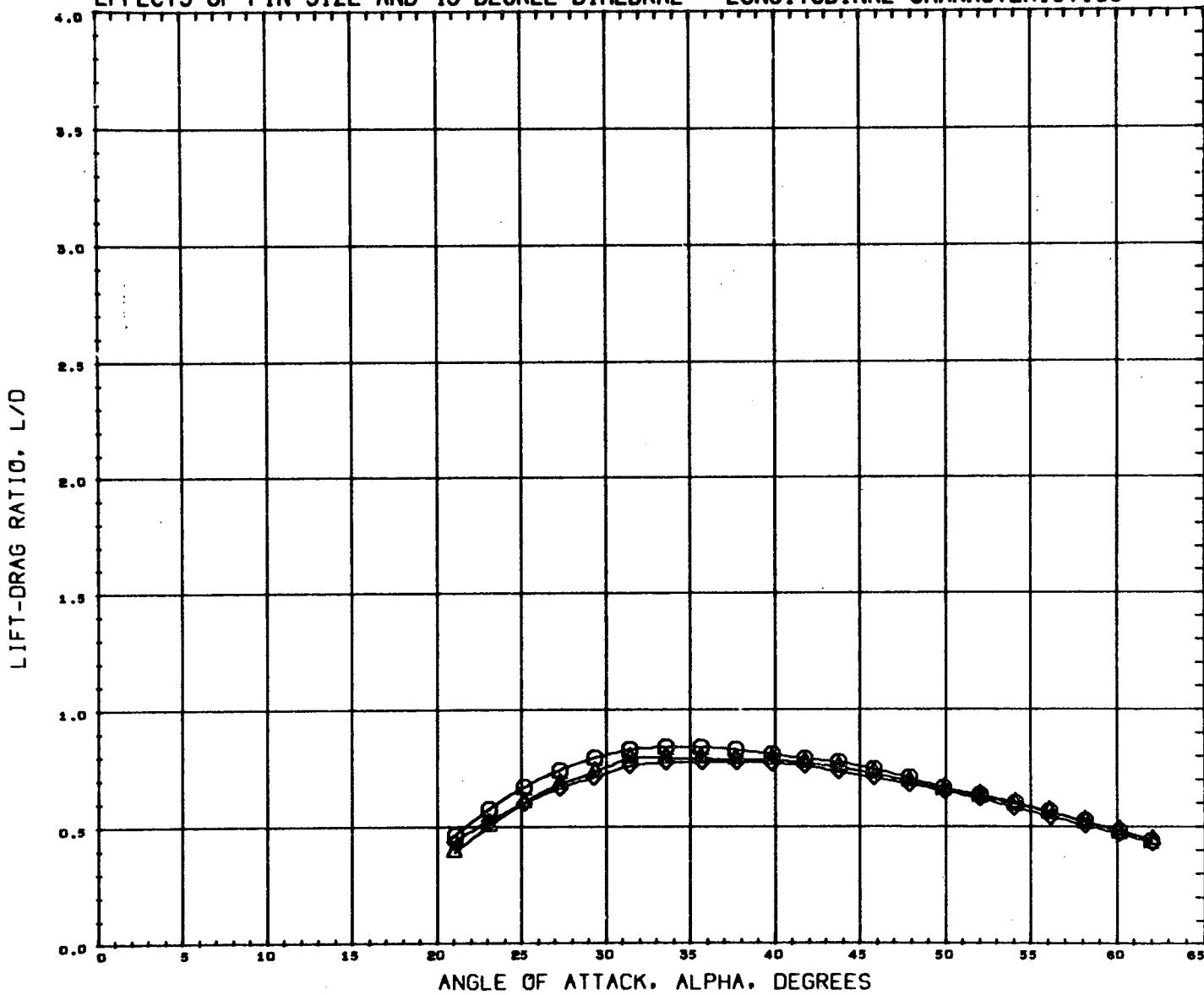
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ZMRP 0.0000 IN.
SCALE 0.0034

MACH 1.200

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EFFECTS OF FIN SIZE AND 45 DEGREE DIHEDRAL - LONGITUDINAL CHARACTERISTICS



DATA SET SYMBOL CONFIGURATION DESCRIPTION

(MS4901) MSFC 518 MSFC PRESSURE FED BOOSTER NIB1
 (IS4917) MSFC 518 MSFC PRESSURE FED BOOSTER NIB1F2
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BETA DINDRL

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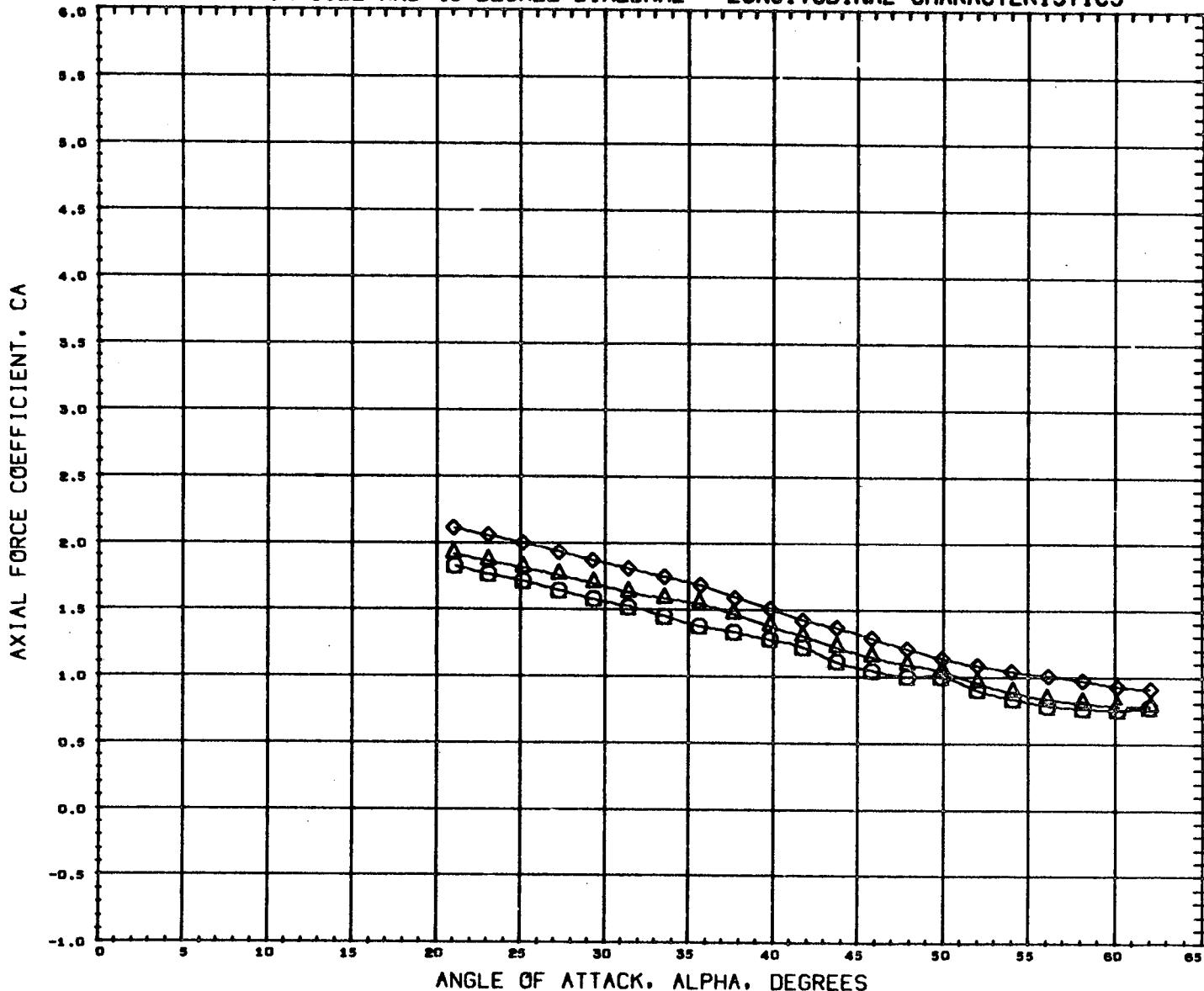
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 SCALE 0.0034

MACH 1.200

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EFFECTS OF FIN SIZE AND 45 DEGREE DIHEDRAL - LONGITUDINAL CHARACTERISTICS



DATA SET SYMBOL CONFIGURATION DESCRIPTION

(MS4901)		MSFC 518	MSFC PRESSURE FED BOOSTER	N1B1	BETA	DIHEDR
(MS4917)		MSFC 518	MSFC PRESSURE FED BOOSTER	N1B1F2	0.000	45.000
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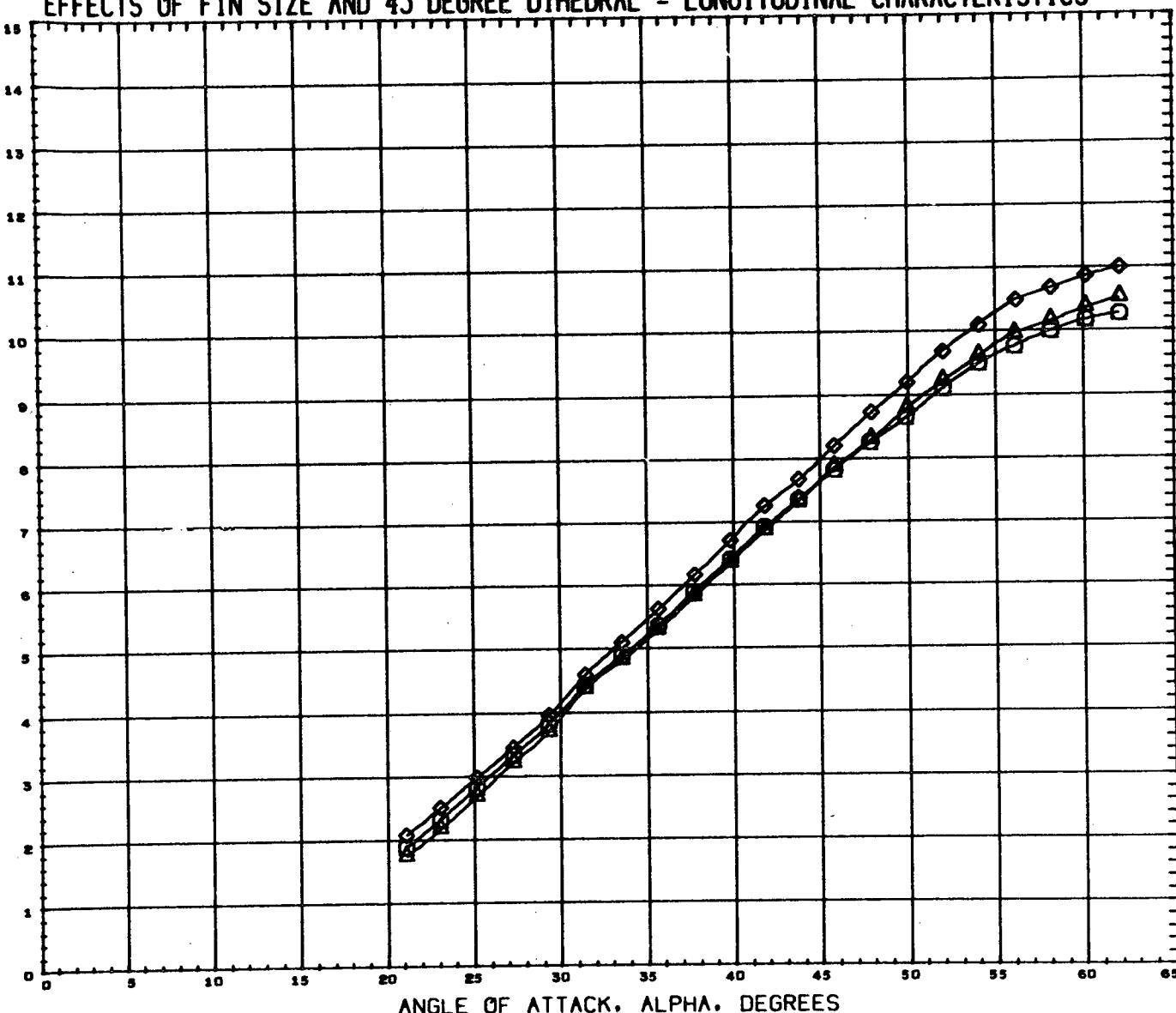
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SCALE	0.0034	

MACH 1.200

EFFECTS OF FIN SIZE AND 45 DEGREE DIHEDRAL - LONGITUDINAL CHARACTERISTICS

NORMAL FORCE COEFFICIENT, CN



DATA SET SYMBOL CONFIGURATION DESCRIPTION

(MS49D1) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1
 (IS4917) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F2
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BETA DMDRL

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 0.000 45.000

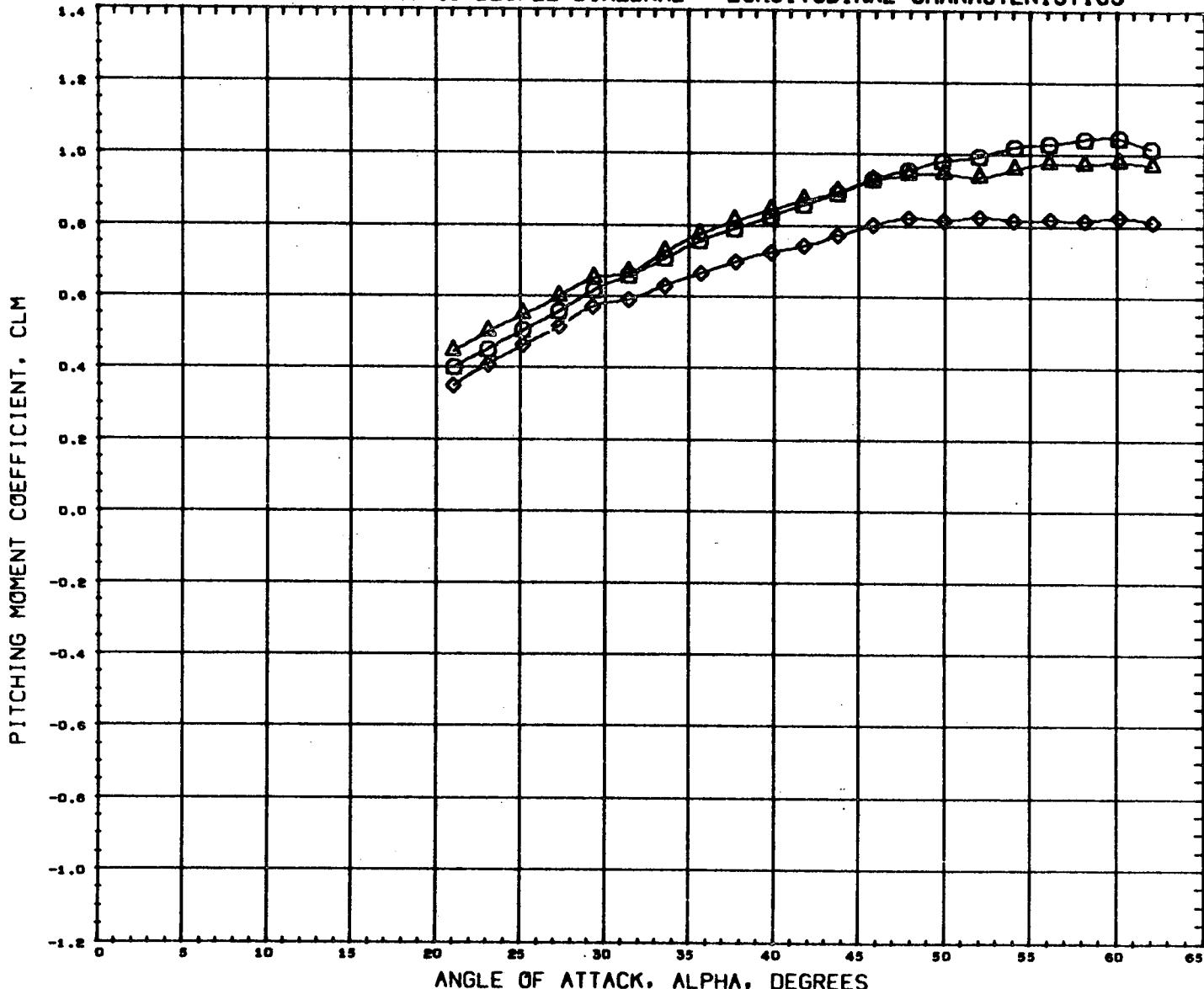
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 SCALE 0.0034

MACH 1.200

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EFFECTS OF FIN SIZE AND 45 DEGREE DIHEDRAL - LONGITUDINAL CHARACTERISTICS



DATA SET SYMBOL CONFIGURATION DESCRIPTION

(K54901)	○	MSFC 518 MSFC PRESSURE FED BOOSTER	N1B1	BETA	DIMDRL
(K54917)	△	MSFC 518 MSFC PRESSURE FED BOOSTER	N1B1F2	0.000	45.000
(K54921)	◇	MSFC 518 MSFC PRESSURE FED BOOSTER	N1B1F6	0.000	45.000

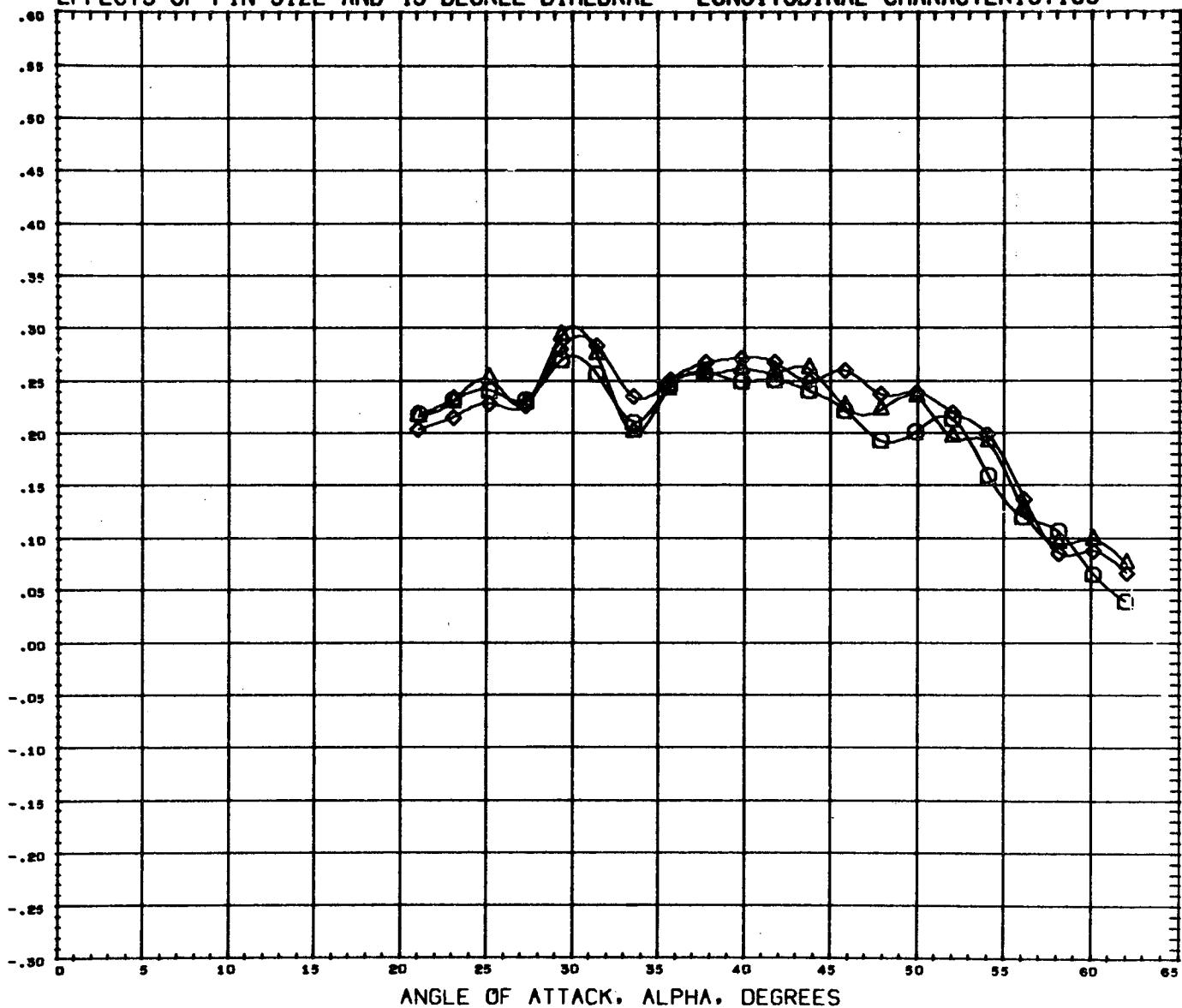
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SCALE	0.0034

MACH 1.200

EFFECTS OF FIN SIZE AND 45 DEGREE DIHEDRAL - LONGITUDINAL CHARACTERISTICS

LOCAL NORMAL FORCE COEFFICIENT SLOPE, CN/A, PER DEGREE



DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (K54901) Q MSFC 518 MSFC PRESSURE FED BOOSTER N1B1
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 (K54921) D MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6

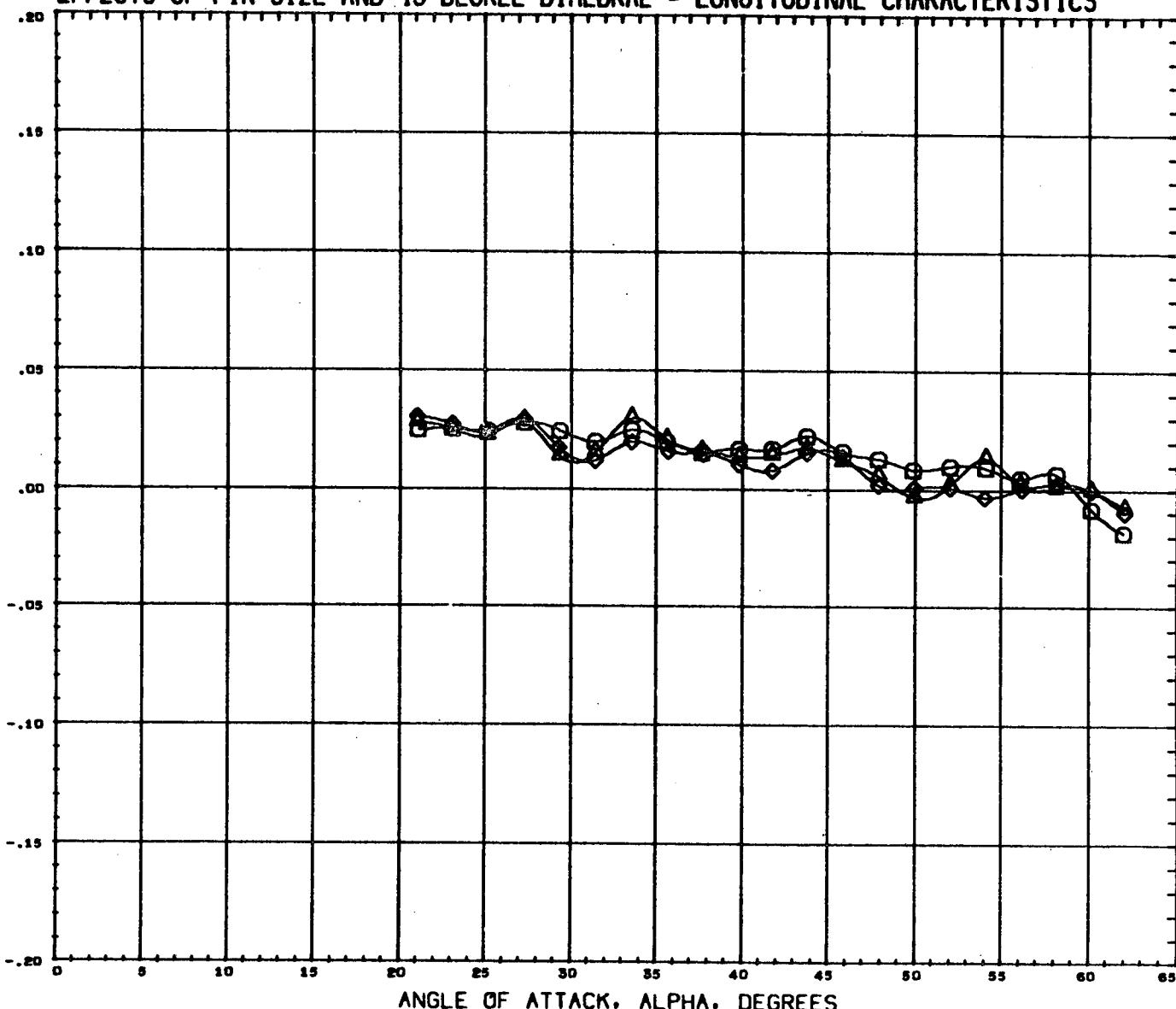
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 SCALE 0.0034

MACH 1.200

EFFECTS OF FIN SIZE AND 45 DEGREE DIHEDRAL - LONGITUDINAL CHARACTERISTICS

LOCAL PITCHING MOMENT COEFFICIENT SLOPE, CLM/A, PER DEGREE



DATA SET SYMBOL CONFIGURATION DESCRIPTION

(K54901)		MSFC 518	MSFC PRESSURE FED BOOSTER	N1B1
(K54917)		MSFC 518	MSFC PRESSURE FED BOOSTER	N1B1F2
(K54921)		MSFC 518	MSFC PRESSURE FED BOOSTER	N1B1F6

BETA DIHDRL

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0.000	45.000

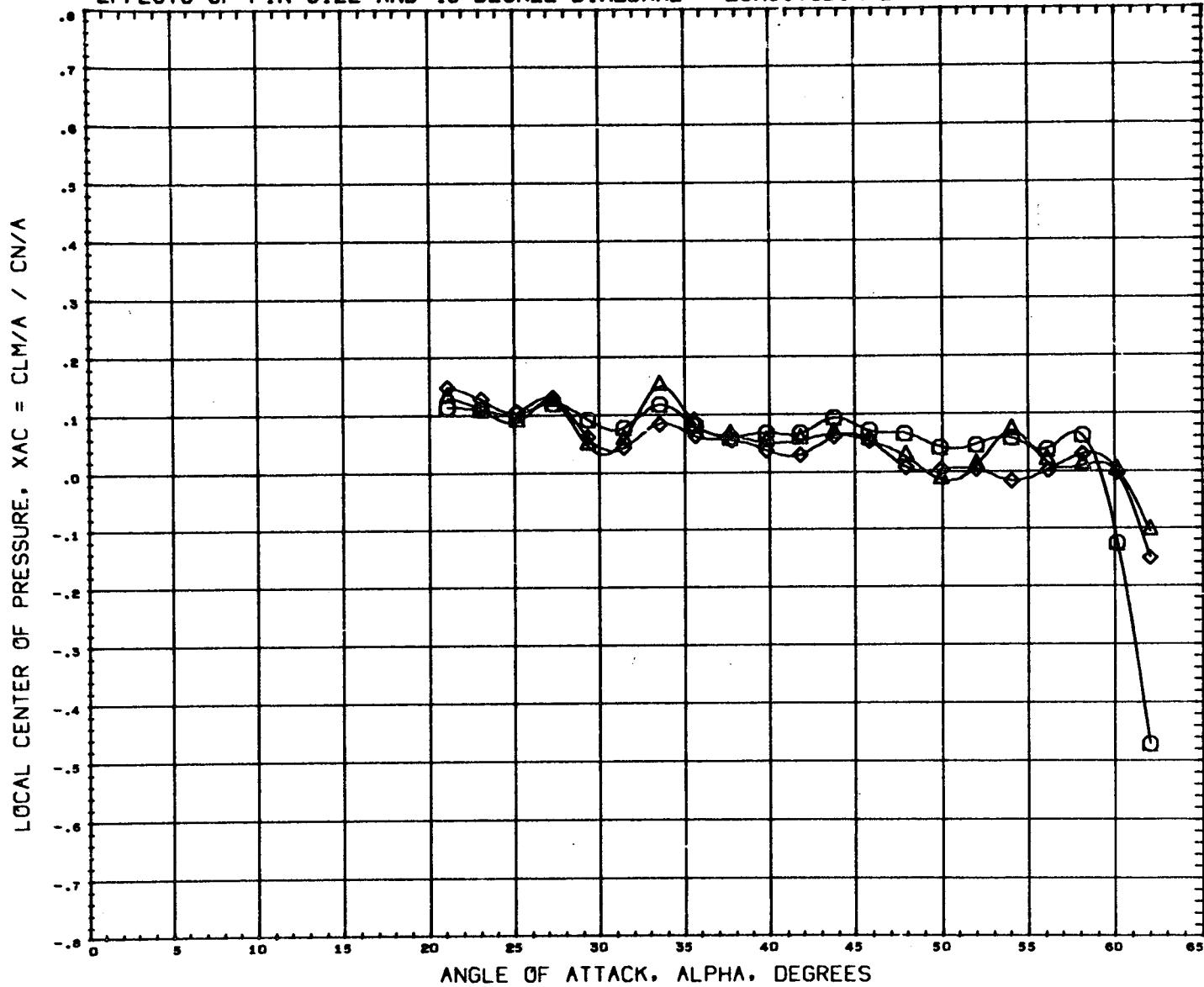
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MACH 1.200

PAGE 60

EFFECTS OF FIN SIZE AND 45 DEGREE DIHEDRAL - LONGITUDINAL CHARACTERISTICS



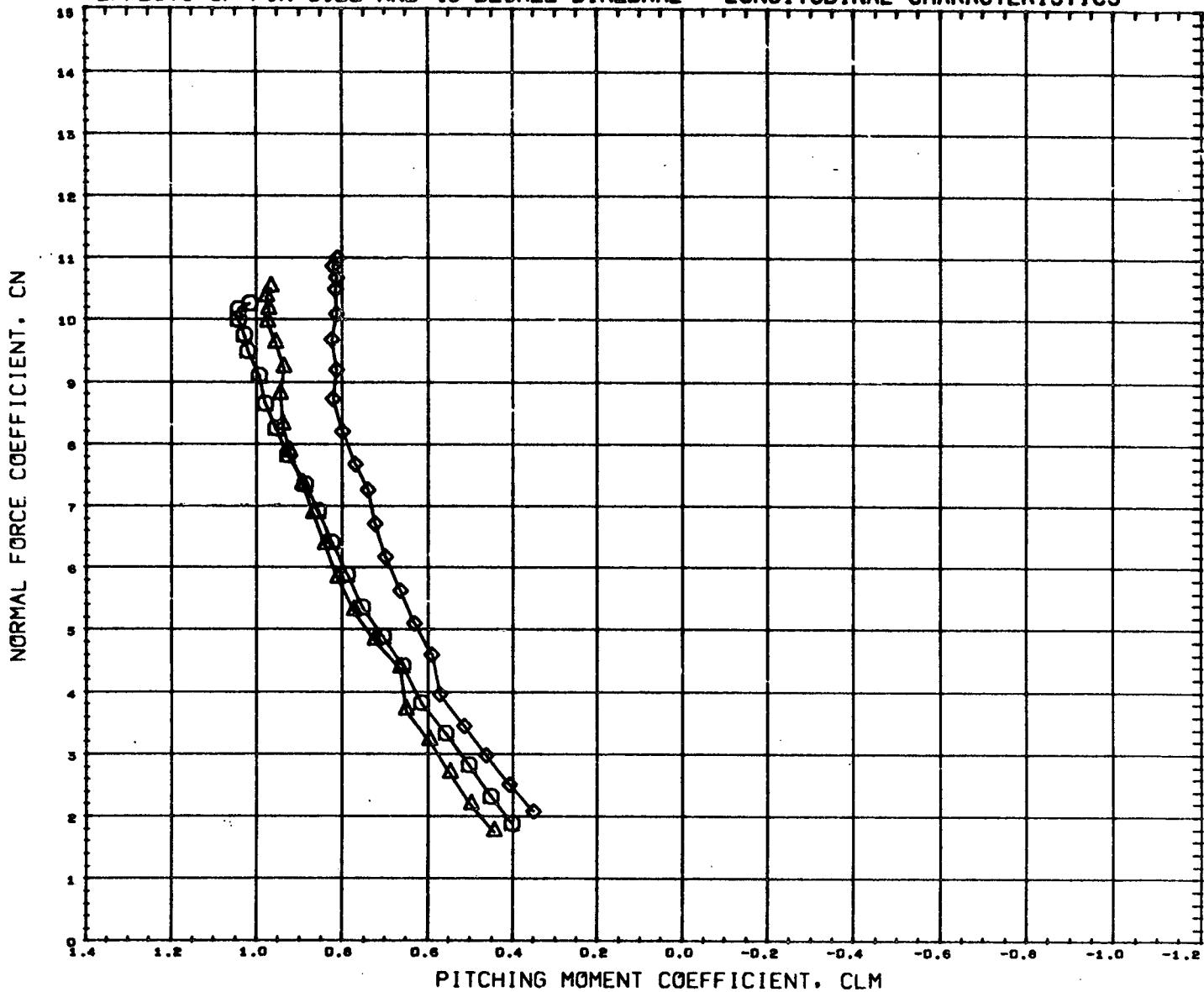
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(L54921)	MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6

BETA	DIHEDR
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0.000	45.000

REFERENCE INFORMATION	
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MACH 1.200

EFFECTS OF FIN SIZE AND 45 DEGREE DIHEDRAL - LONGITUDINAL CHARACTERISTICS



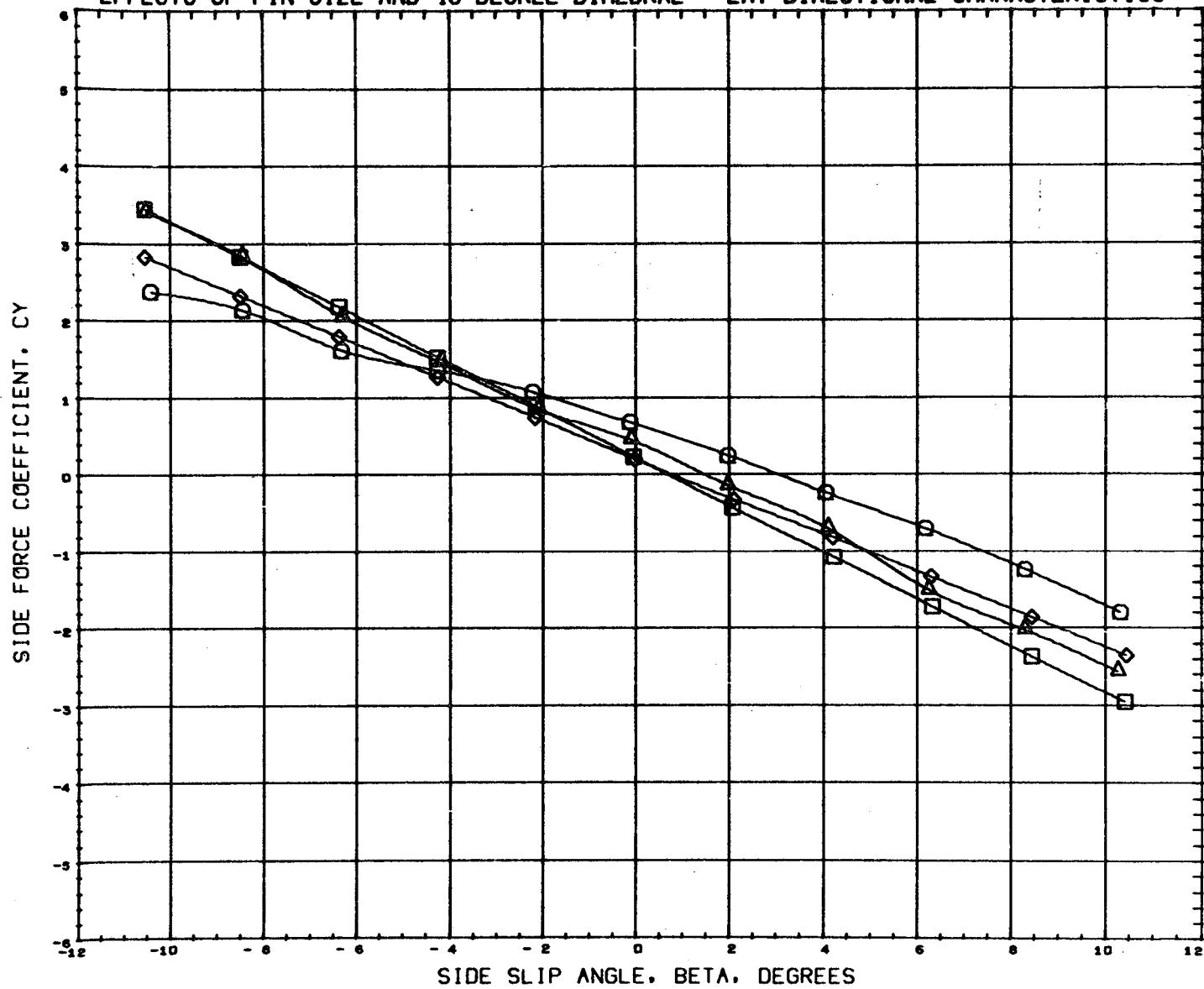
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 YMRP 0.0000 IN.
 ZMRP 0.0000 IN.
 SCALE 0.0034

MACH 1.200

EFFECTS OF FIN SIZE AND 45 DEGREE DIHEDRAL - LAT-DIRECTIONAL CHARACTERISTICS



DATA SET SYMBOL CONFIGURATION DESCRIPTION

(K54D19) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F2
 (K54D23) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6
 (K54D20) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F2
 (K54D24) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6

ALPHA DIHDRL

30.000 45.000
 30.000 45.000
 50.000 45.000
 50.000 45.000

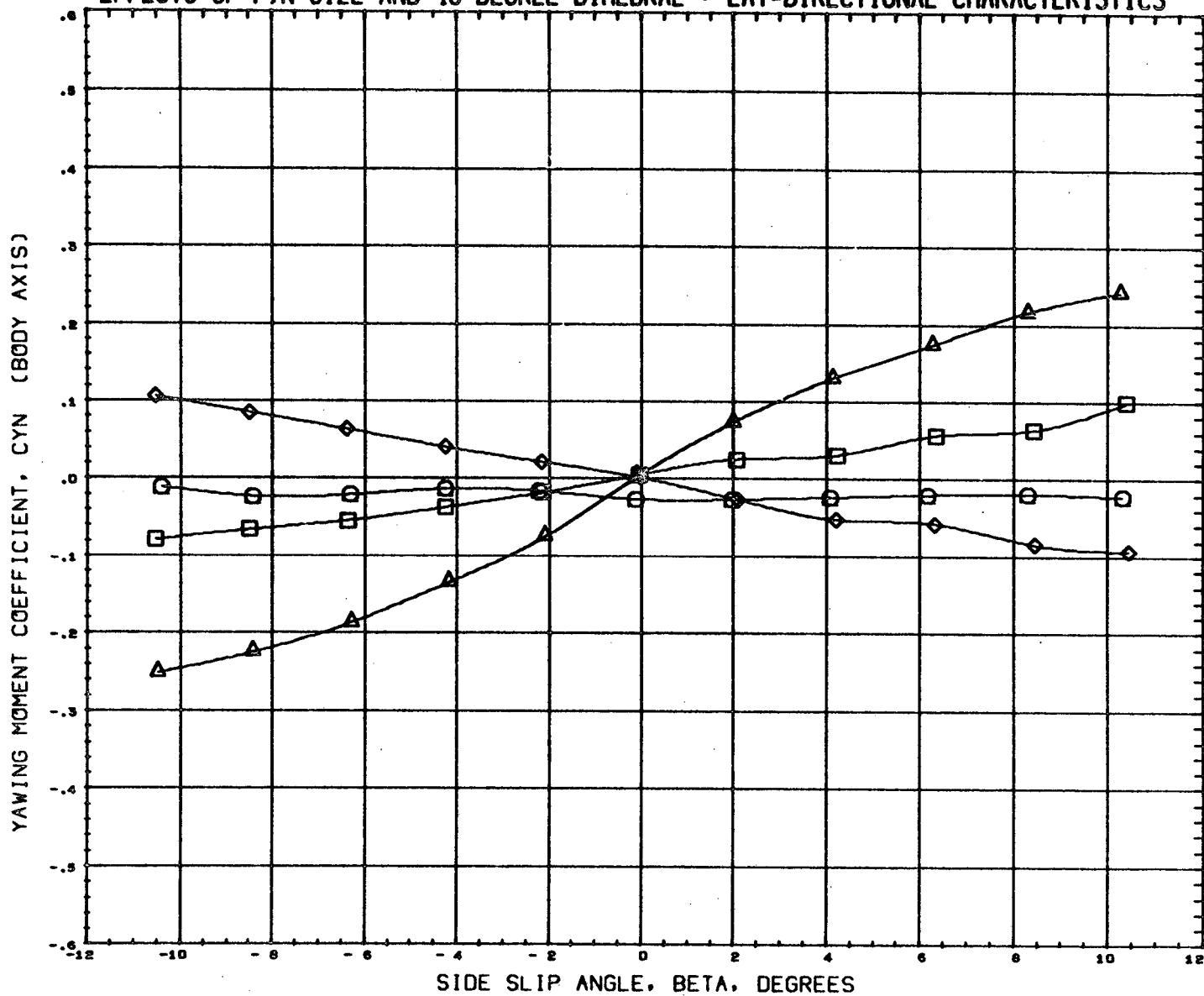
REFERENCE INFORMATION

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 LREF 7.2230 IN.
 BREF 7.2230 IN.
 XNRP 4.3340 IN.
 YNRP 0.0000 IN.
 ZNRP 0.0000 IN.
 SCALE 0.0034

MACH 1.197

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EFFECTS OF FIN SIZE AND 45 DEGREE DIHEDRAL - LAT-DIRECTIONAL CHARACTERISTICS



DATA SET SYMBOL CONFIGURATION DESCRIPTION

(K54019)		MSFC 518	MSFC PRESSURE FED BOOSTER	N1B1F2
(K54023)		MSFC 518	MSFC PRESSURE FED BOOSTER	N1B1F6
(K54020)		MSFC 518	MSFC PRESSURE FED BOOSTER	N1B1F2
(K54024)		MSFC 518	MSFC PRESSURE FED BOOSTER	N1B1F6

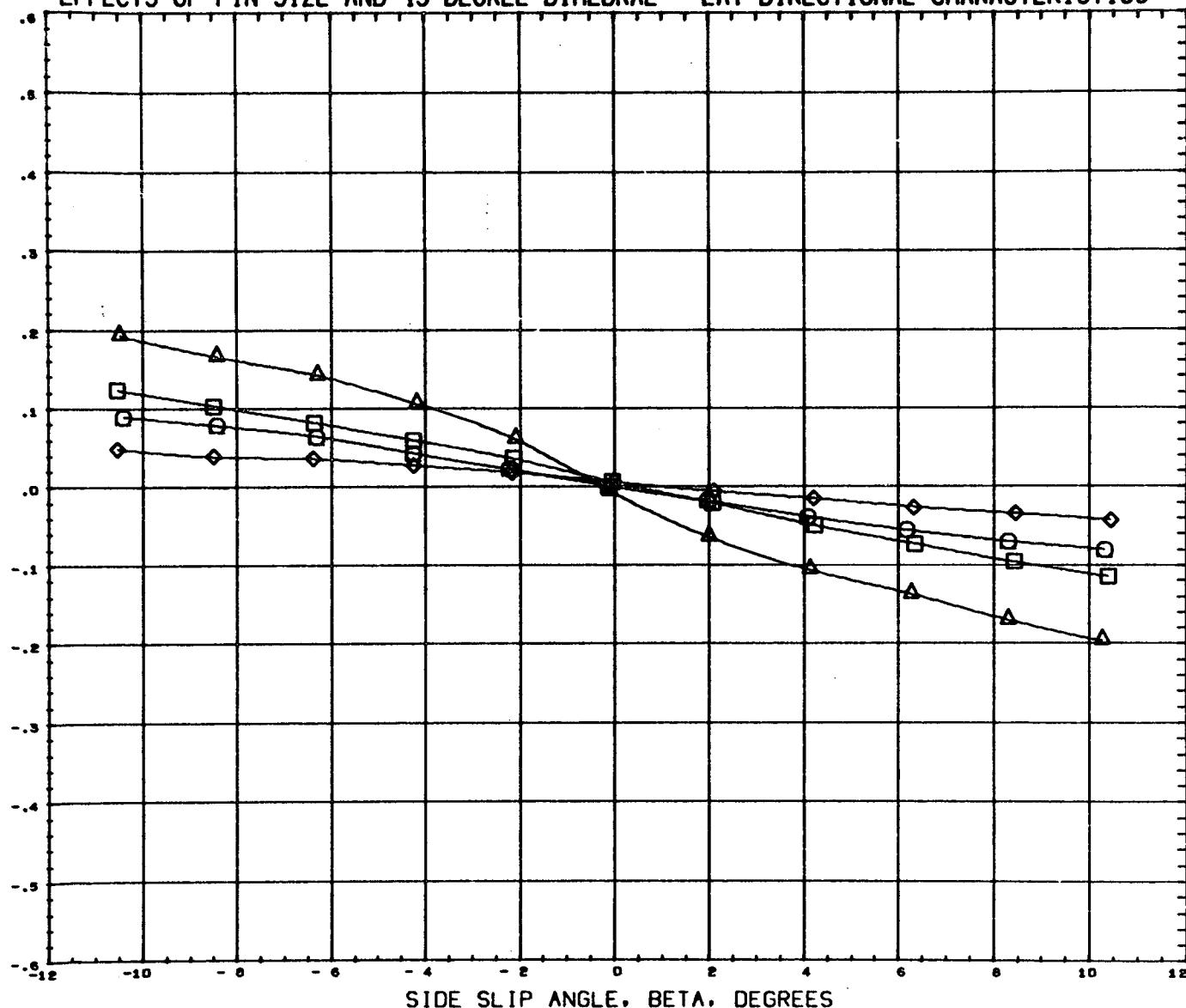
ALPHA DIHDRL
30.000 45.000
30.000 45.000
50.000 45.000
50.000 45.000

REFERENCE INFORMATION
SREF 0.9330 50. IN.
LREF 7.2230 IN.
BREF 7.2230 IN.
XMRP 4.3340 IN.
YMRP 0.0000 IN.
ZMRP 0.0000 IN.
SCALE 0.0034

MACH 1.197

EFFECTS OF FIN SIZE AND 45 DEGREE DIHEDRAL - LAT-DIRECTIONAL CHARACTERISTICS

ROLLING MOMENT COEFFICIENT, CBL (BODY AXIS)



DATA SET SYMBOL CONFIGURATION DESCRIPTION

(K54019)	○	MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F2
(K54023)	□	MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6
(K54020)	◇	MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F2
(K54024)	□	MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6

ALPHA DIHDRL

30.000	45.000
30.000	45.000
50.000	45.000
50.000	45.000

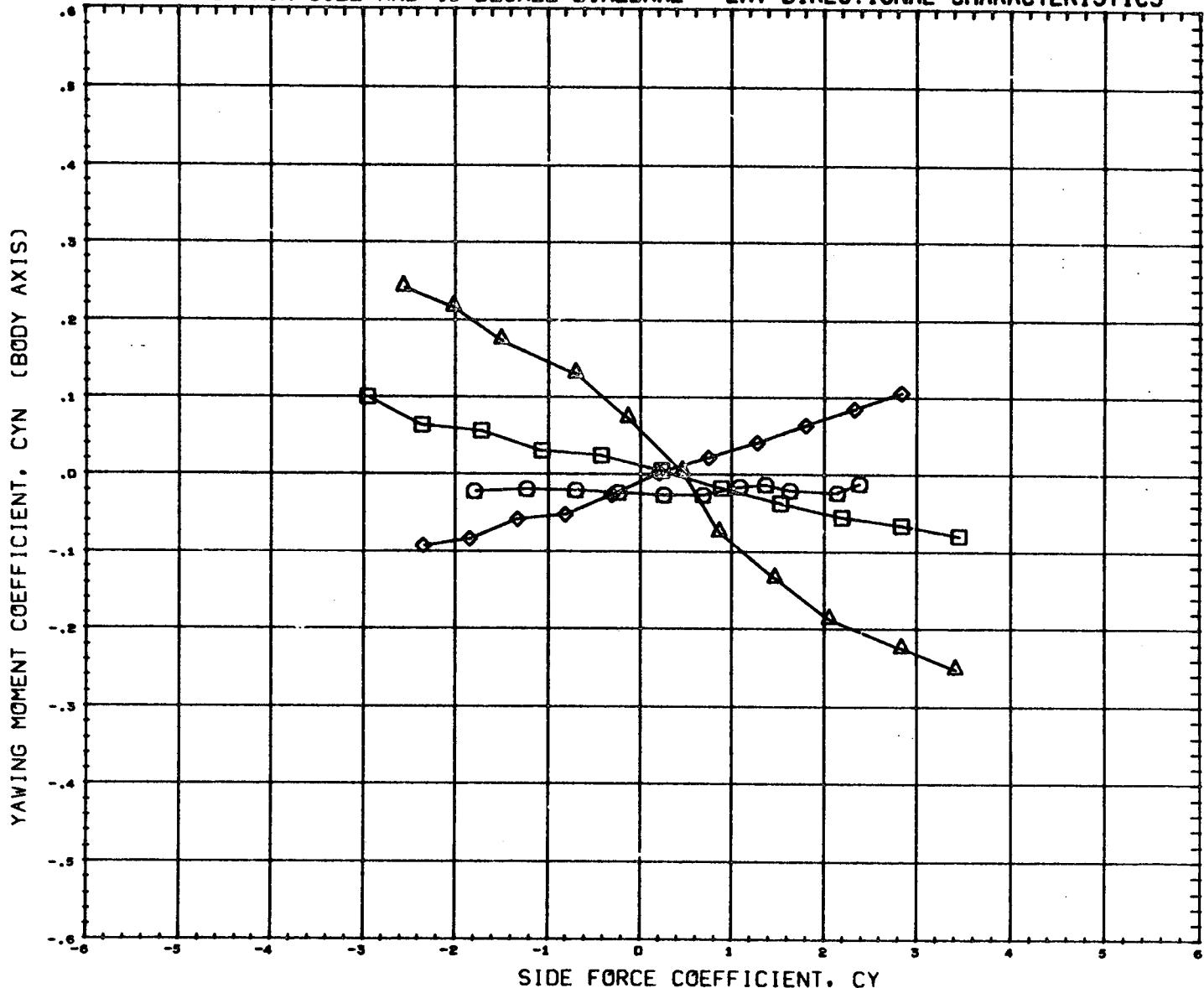
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BREF	7.2230	IN.
XMRP	4.3340	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

MACH 1.197

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EFFECTS OF FIN SIZE AND 45 DEGREE DIHEDRAL - LAT-DIRECTIONAL CHARACTERISTICS



DATA SET SYMBOL CONFIGURATION DESCRIPTION

(K54D19)	△	MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F2	ALPHA	50.000	DIMDR	45.000
(K54D23)	▲	MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6		50.000		45.000
(K54D20)	□	MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F2		50.000		45.000
(K54D24)	□	MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6		50.000		45.000

REFERENCE INFORMATION

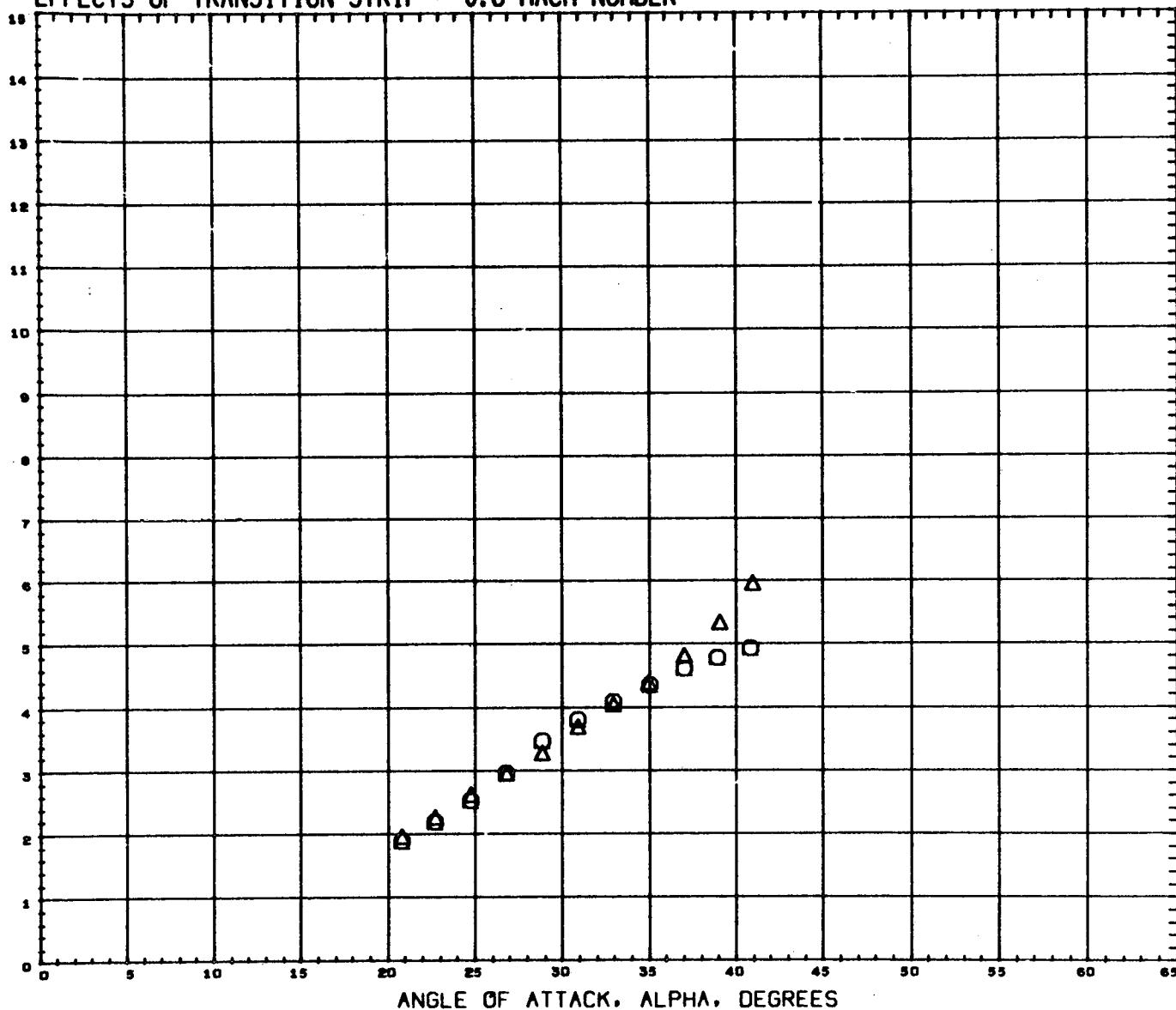
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XMRP	4.3340	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

MACH 1.197

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EFFECTS OF TRANSITION STRIP - 0.6 MACH NUMBER

NORMAL FORCE COEFFICIENT, CN



DATA SET SYMBOL CONFIGURATION DESCRIPTION

(Q54021) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6
(S54026) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6 + TS

BETA DIHDRL

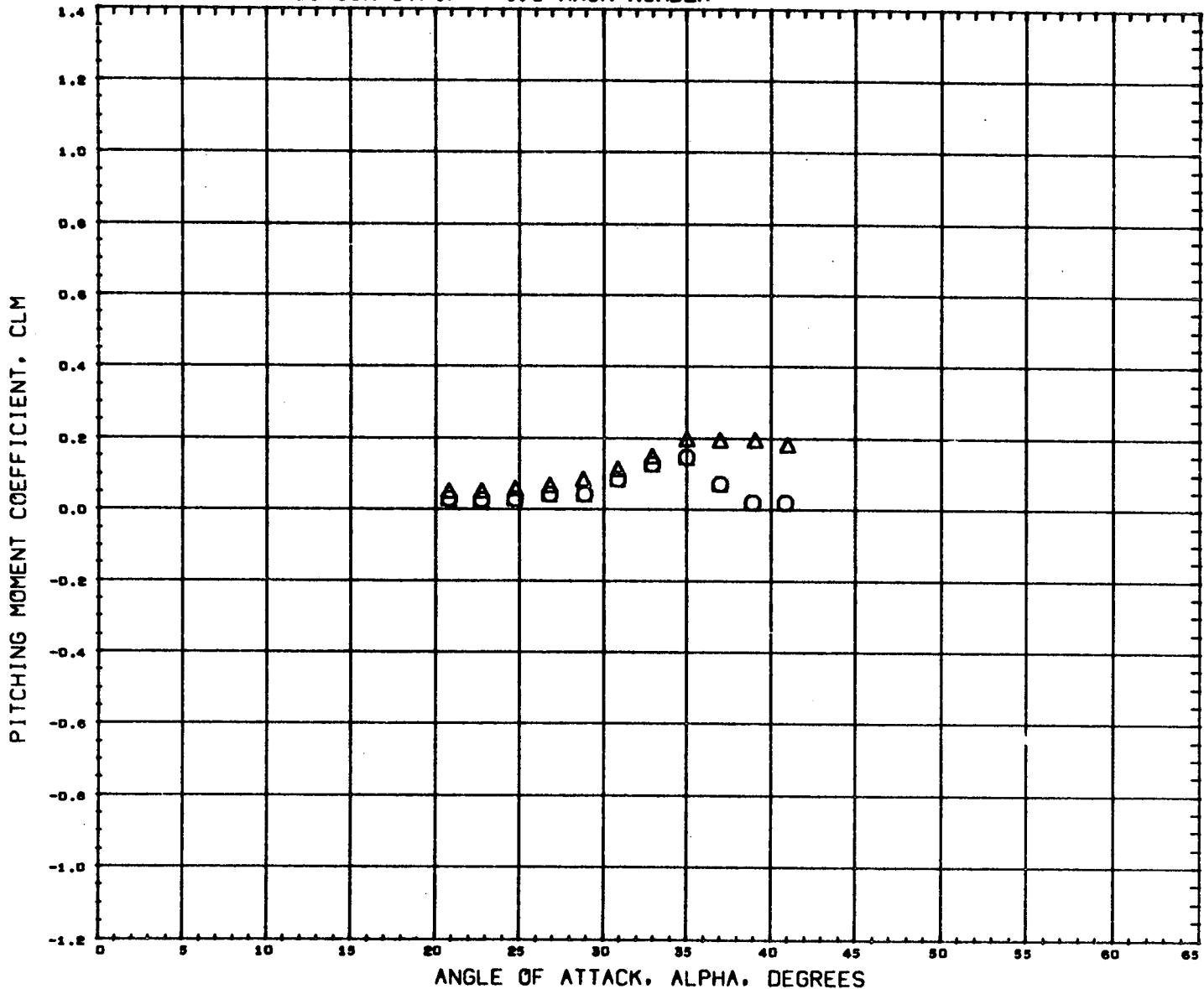
0.000 45.000
0.000 45.000

REFERENCE INFORMATION

SREF 0.9330 SQ. IN.
LREF 7.2230 IN.
BREF 7.2230 IN.
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YMRP 0.0000 IN.
ZMRP 0.0000 IN.
SCALE 0.0034

MACH 0.599

EFFECTS OF TRANSITION STRIP - 0.6 MACH NUMBER



DATA SET SYMBOL CONFIGURATION DESCRIPTION

(654021) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6
 (854028) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6 + TS

BETA DIHDL

0.000 45.000
 0.000 45.000

REFERENCE INFORMATION

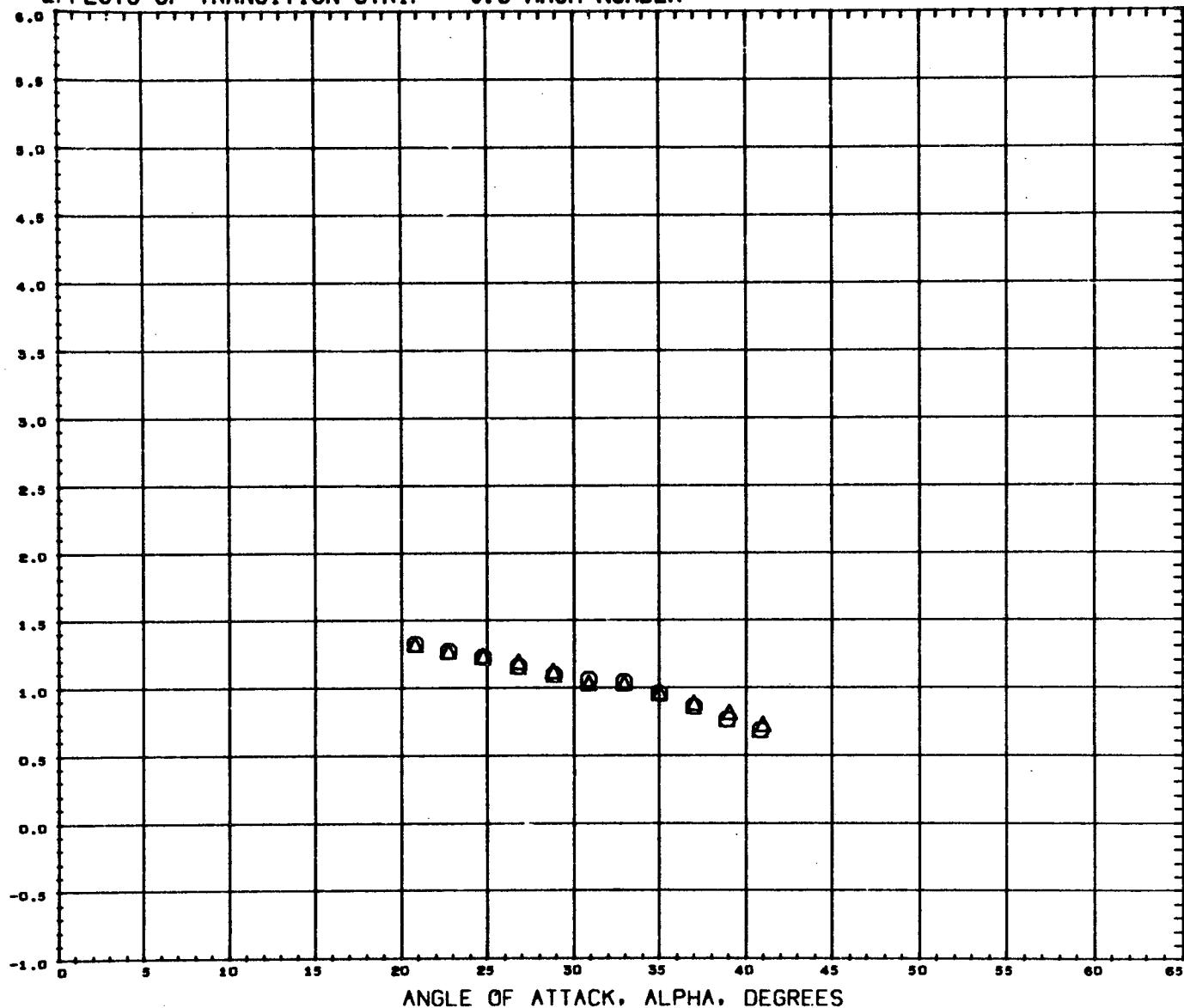
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 BREF 7.2230 IN.
 XMMP 4.3340 IN.
 YMMP 0.0000 IN.
 ZMMP 0.0000 IN.
 SCALE 0.0034

MACH 0.599

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EFFECTS OF TRANSITION STRIP - 0.6 MACH NUMBER

AXIAL FORCE COEFFICIENT, CA



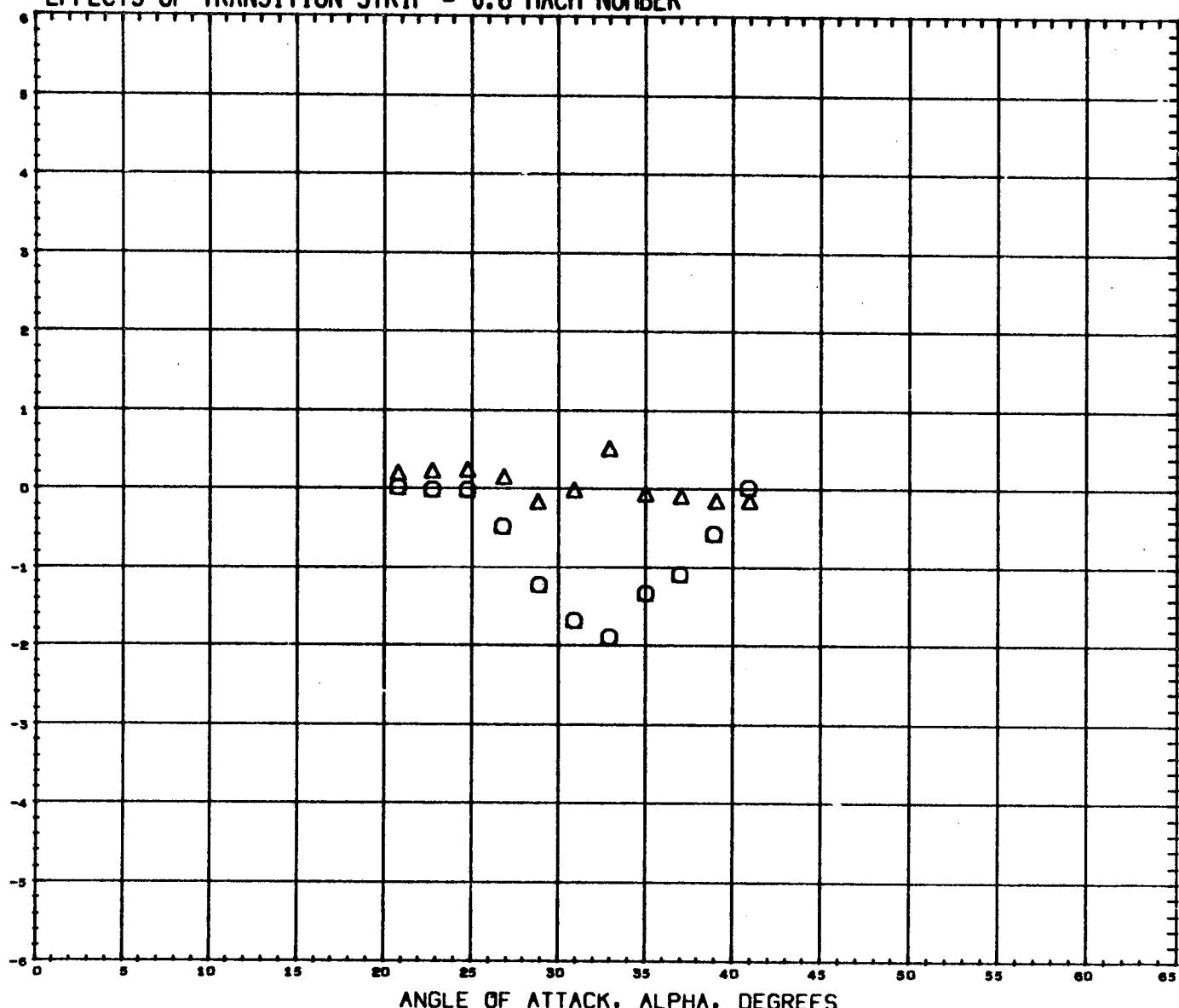
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 (Q54021) Q MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6 BETA DIMDRL
 (Q54028) S MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6 + TS 0.000 45.000

MACH 0.599

REFERENCE INFORMATION
 SREF 0.9330 56. IN.
 LREF 7.2230 IN.
 BREF 7.2230 IN.
 XMMP 4.3340 IN.
 YMMP 0.0000 IN.
 ZMMP 0.0000 IN.
 SCALE 0.0034

EFFECTS OF TRANSITION STRIP - 0.6 MACH NUMBER

SIDE FORCE COEFFICIENT, CY



ANGLE OF ATTACK, ALPHA, DEGREES

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(854021) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6 BETA 0.000 D1HDL 45.000
(854028) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6 + TS BETA 0.000 D1HDL 45.000

BETA D1HDL

REFERENCE INFORMATION

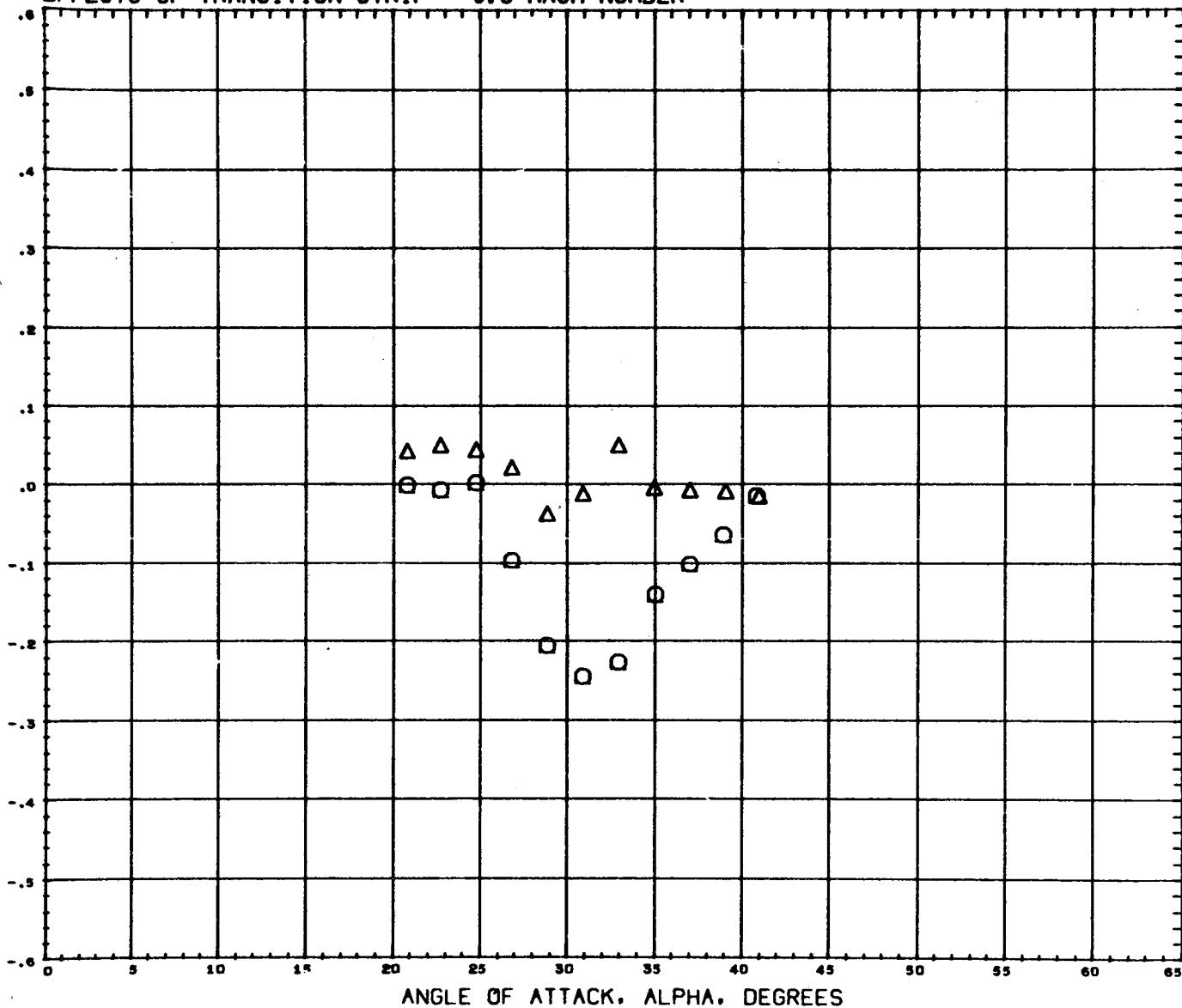
BREF	0.9330	SG. IN.
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BREF	7.2230	IN.
XMRP	4.3340	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

MACH 0.599

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EFFECTS OF TRANSITION STRIP - 0.6 MACH NUMBER

YAWING MOMENT COEFFICIENT, CYN (BODY AXIS)



DATA SET SYMBOL CONFIGURATION DESCRIPTION

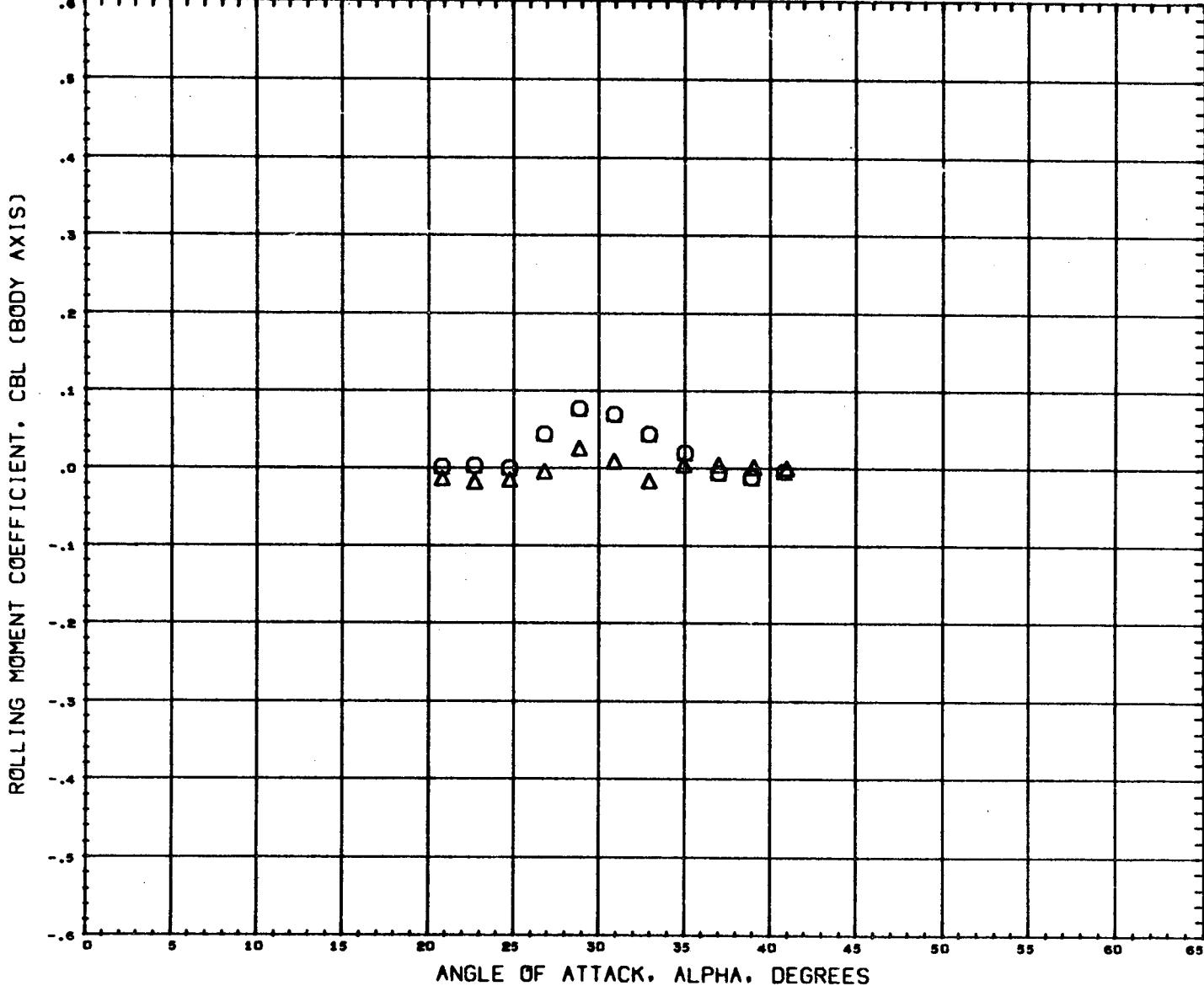
(Q54021) Q MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6 0.000 45.000
(S54028) S MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6 + TS 0.000 45.000

MACH 0.599

BETA DIHDRL

REFERENCE INFORMATION
SREF 0.9330 SQ. IN.
LREF 7.2230 IN.
BREF 7.2230 IN.
XMRP 4.3340 IN.
YMRP 0.0000 IN.
ZMRP 0.0000 IN.
SCALE 0.0034

EFFECTS OF TRANSITION STRIP - 0.6 MACH NUMBER



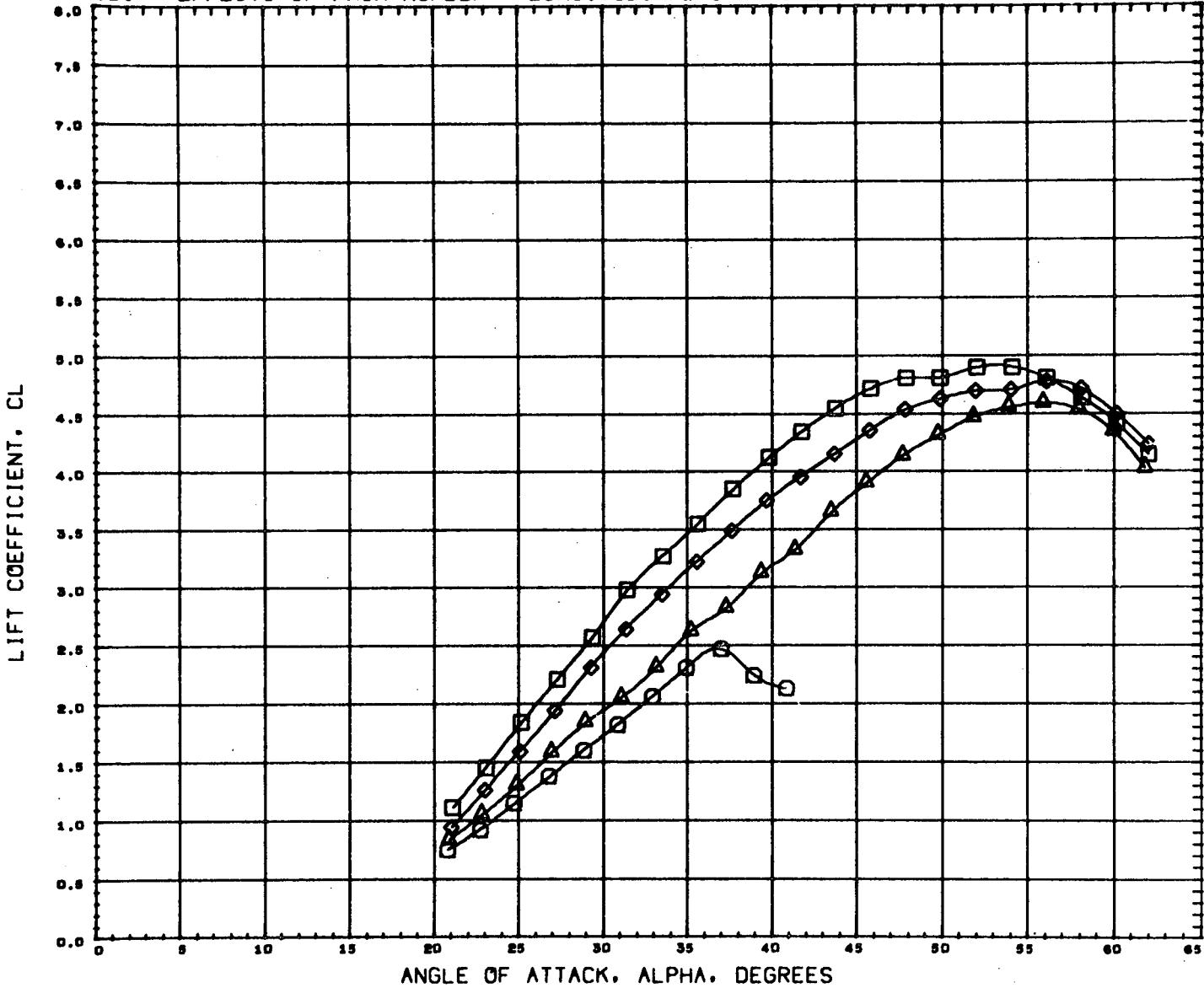
DATA SET SYMBOL CONFIGURATION DESCRIPTION
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 (654026) R MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6 + TS

BETA DIHDRL
 0.000 45.000
 0.000 45.000

REFERENCE INFORMATION
 SREF 0.9330 SQ.IN.
 LREF 7.2230 IN.
 BREF 7.2230 IN.
 XMRP 4.3340 IN.
 YMRF 0.0000 IN.
 ZMRP 0.0000 IN.
 SCALE 0.0034

MACH 0.599

N1B1 - EFFECTS OF MACH NUMBER - LONGITUDINAL CHARACTERISTICS



SYMBOL	MACH	PARAMETRIC VALUES
○	0.600	BETA
△	0.699	
◊	1.101	
□	1.200	0.000

DATA MIST. CODE STV*E*G

REFERENCE INFORMATION		
REF	0.9330	89. IN.
REF	7.2230	IN.
REF	7.2230	IN.
IRP	4.3340	IN.
IRP	0.0000	IN.
IRP	0.0000	IN.
CALE	0.0034	

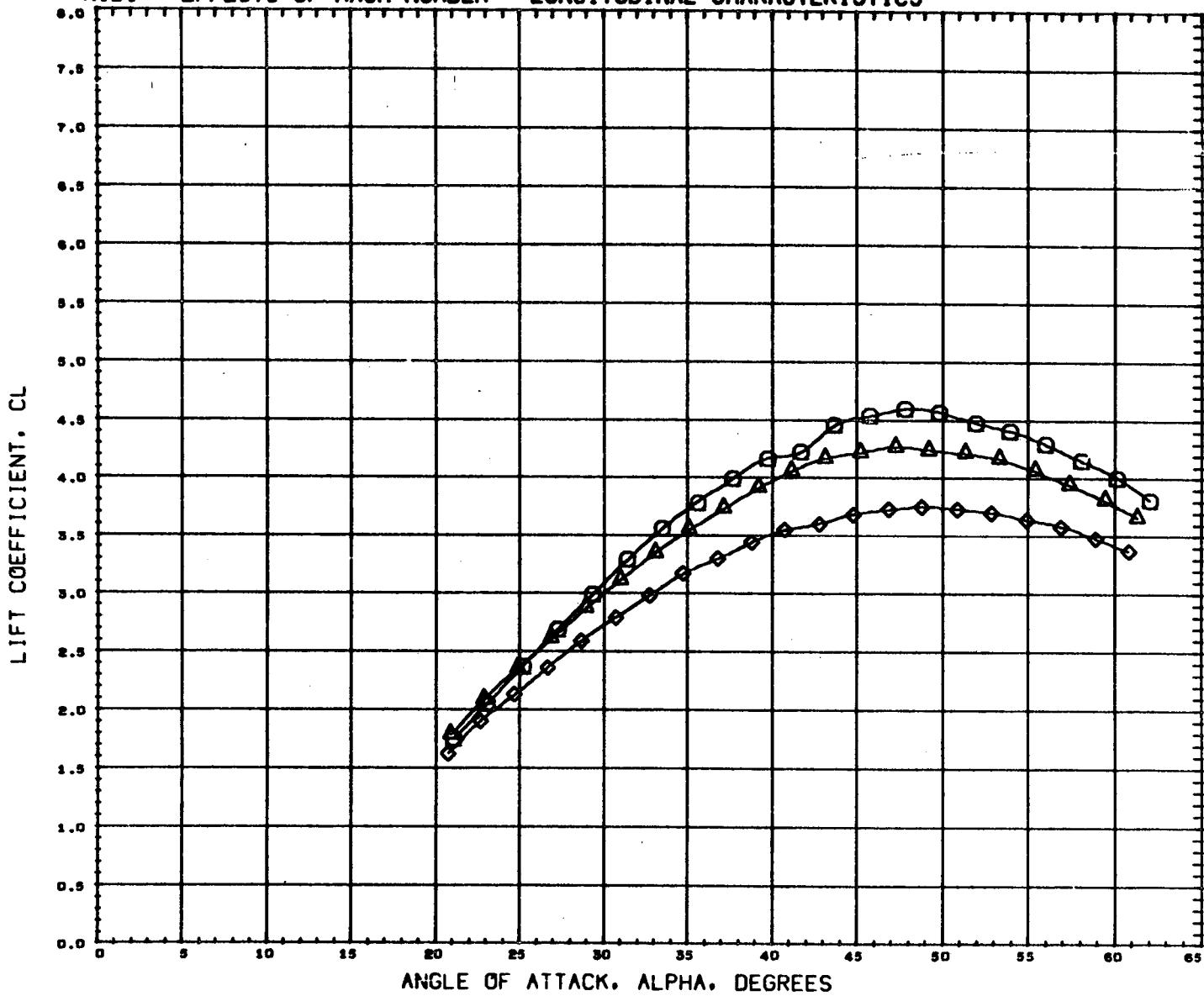
MSFC 518 MSFC PRESSURE FED BOOSTER N1B1

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N1B1 - EFFECTS OF MACH NUMBER - LONGITUDINAL CHARACTERISTICS



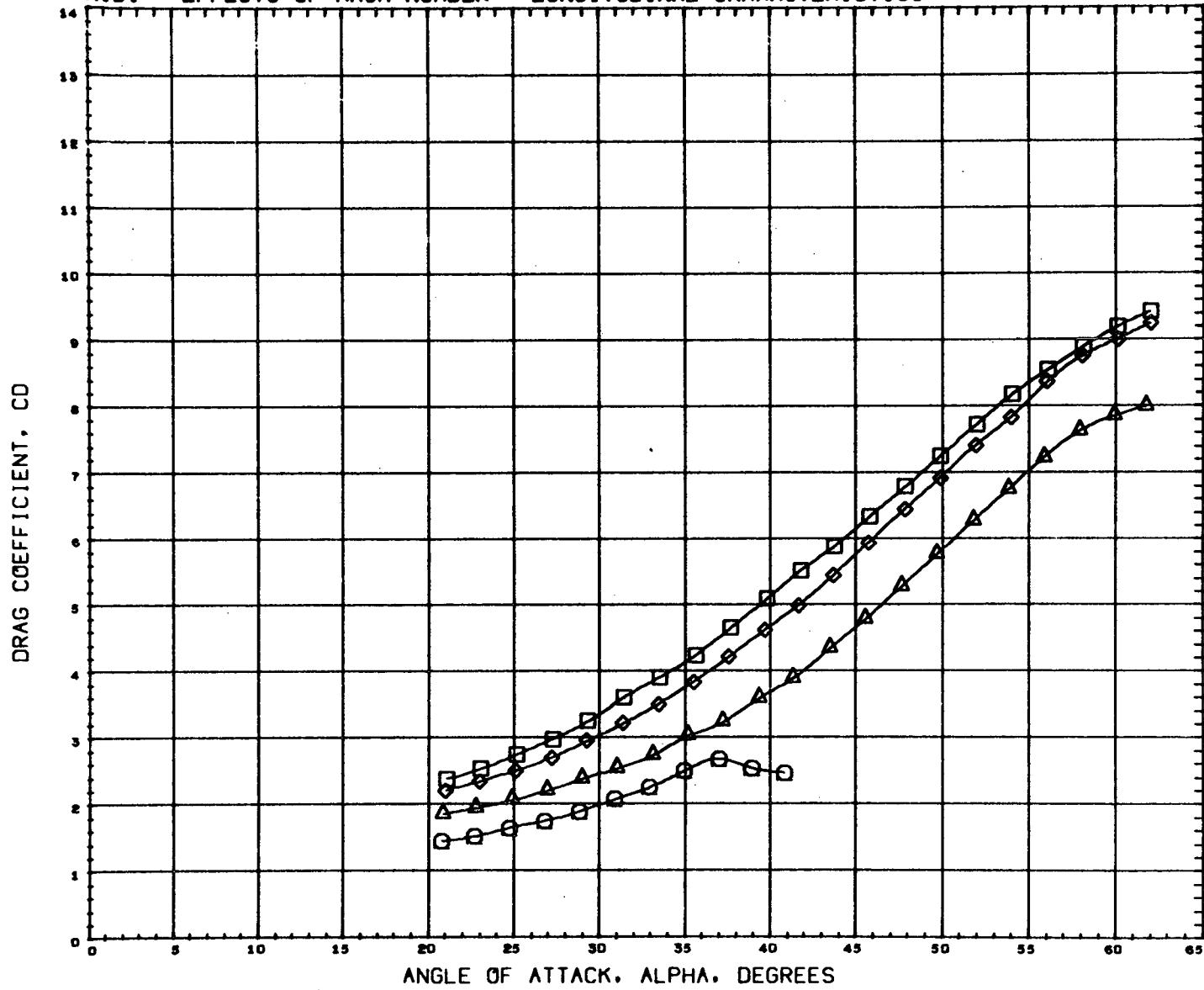
SYMBOL MACH **PARAMETRIC VALUES**
 1.961 BETA 0.000
 8.740

Δ 2.740
 \diamond 4.959

DATA MIST. CODE STV*E*G

REFERENCE INFORMATION		
SREF	0.9330	SQ.IN.
LREF	7.2230	IN.
BREF	7.2230	IN.
XMRP	4.3340	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

N1B1 - EFFECTS OF MACH NUMBER - LONGITUDINAL CHARACTERISTICS



SYMBOL	MACH	BETA	PARAMETRIC VALUES
○	0.600		0.000
△	0.899		
◊	1.101		
□	1.200		

DATA MIST. CODE STV*E#6

MSFC 518 MSFC PRESSURE FED BOOSTER N1B1

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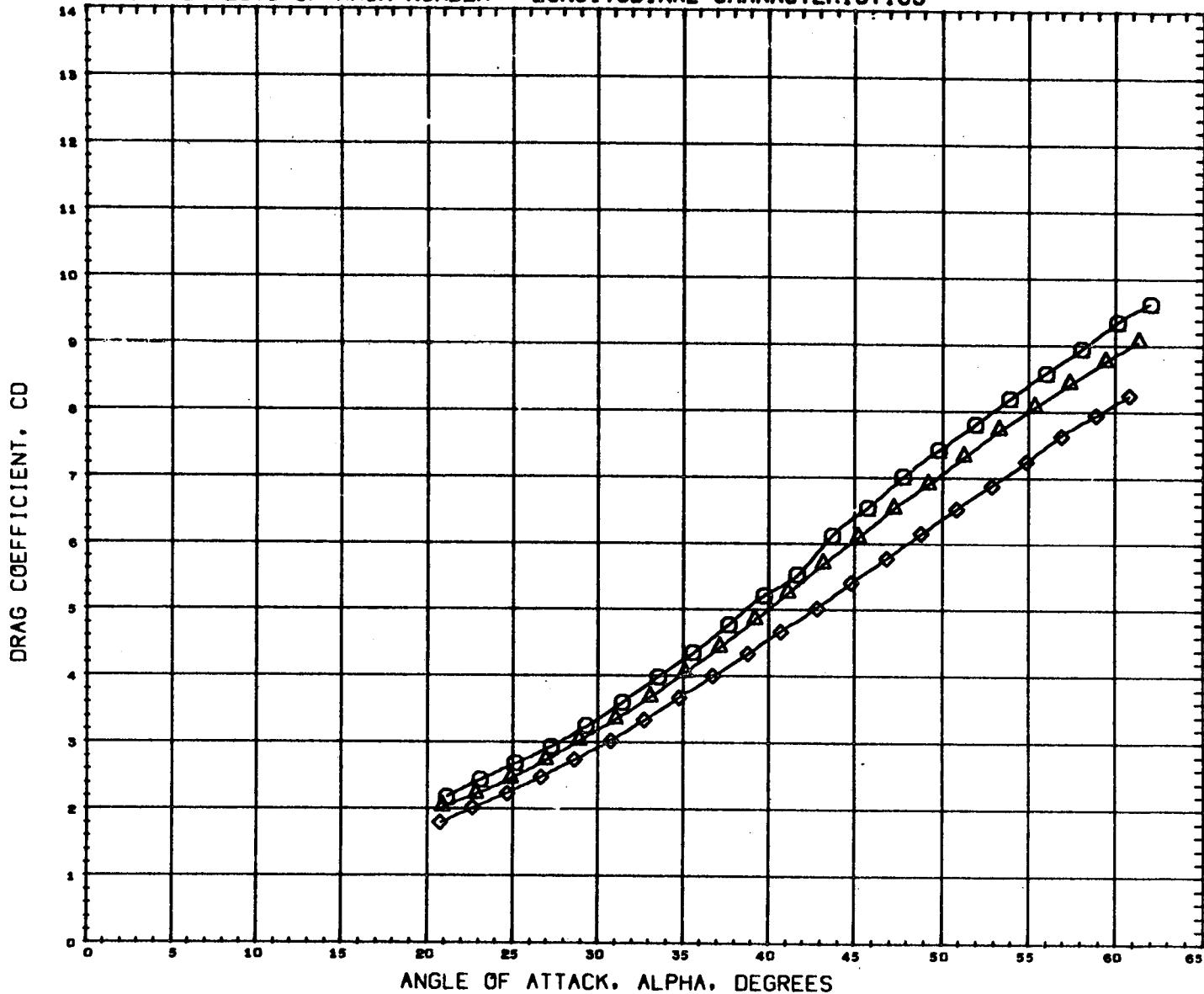
PAGE

75

REFERENCE INFORMATION		
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LREF	7.2230	IN.
BREF	7.2230	IN.
XMRP	4.3340	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	IN.

3 A

N1B1 - EFFECTS OF MACH NUMBER - LONGITUDINAL CHARACTERISTICS



SYMBOL MACH BETA PARAMETRIC VALUES
 ◻ 1.961 0.000
 ▲ 2.740 0.000
 ◇ 4.959 0.000

DATA MIST. CODE STV*E*G

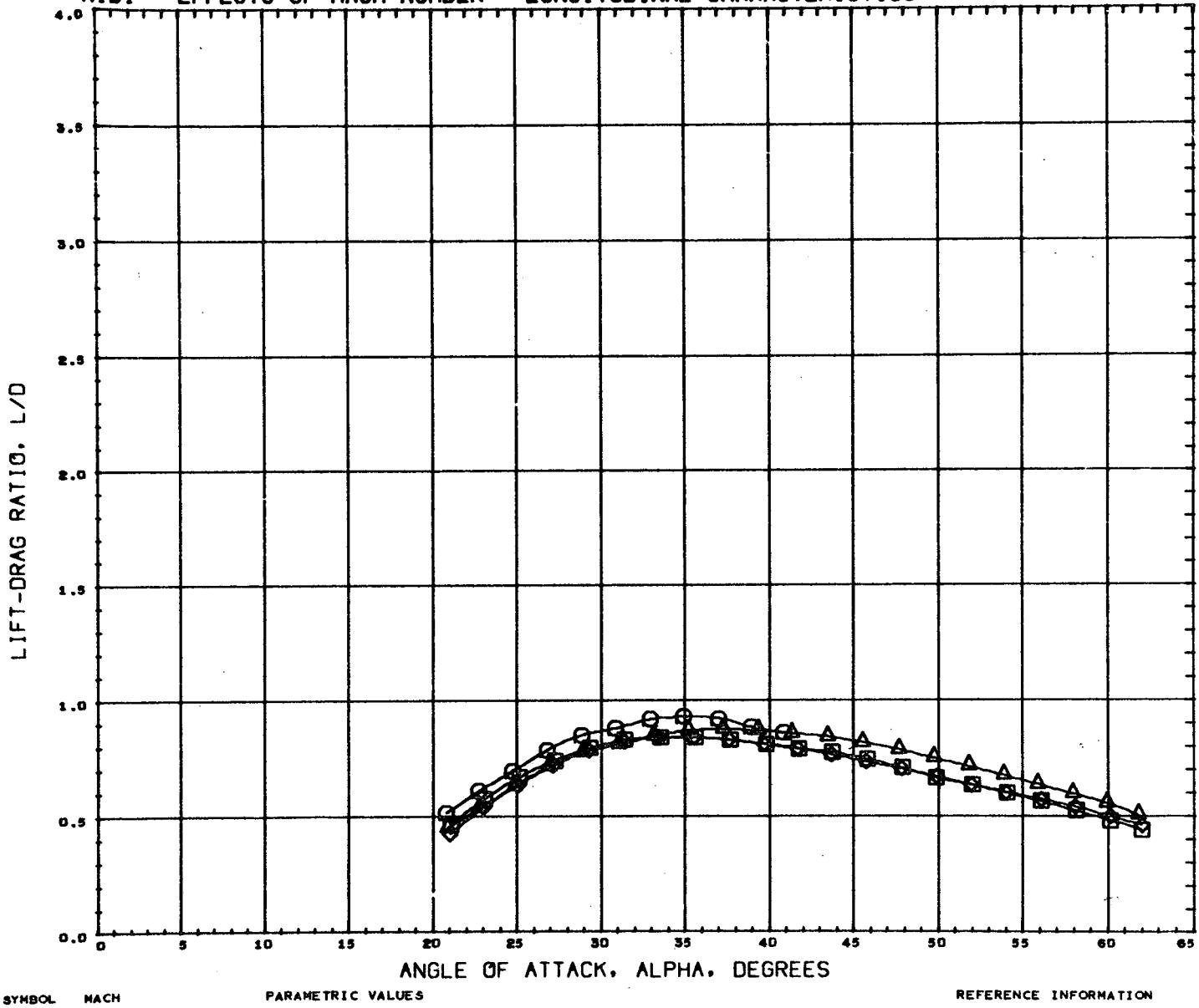
MSFC 518 MSFC PRESSURE FED BOOSTER N1B1

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REFERENCE INFORMATION
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 LREF 7.2230 IN.
 BREF 7.2230 IN.
 XHRP 4.3340 IN.
 YHRP 0.0000 IN.
 ZHRP 0.0000 IN.
 SCALE 0.0034 IN.

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N1B1 - EFFECTS OF MACH NUMBER - LONGITUDINAL CHARACTERISTICS

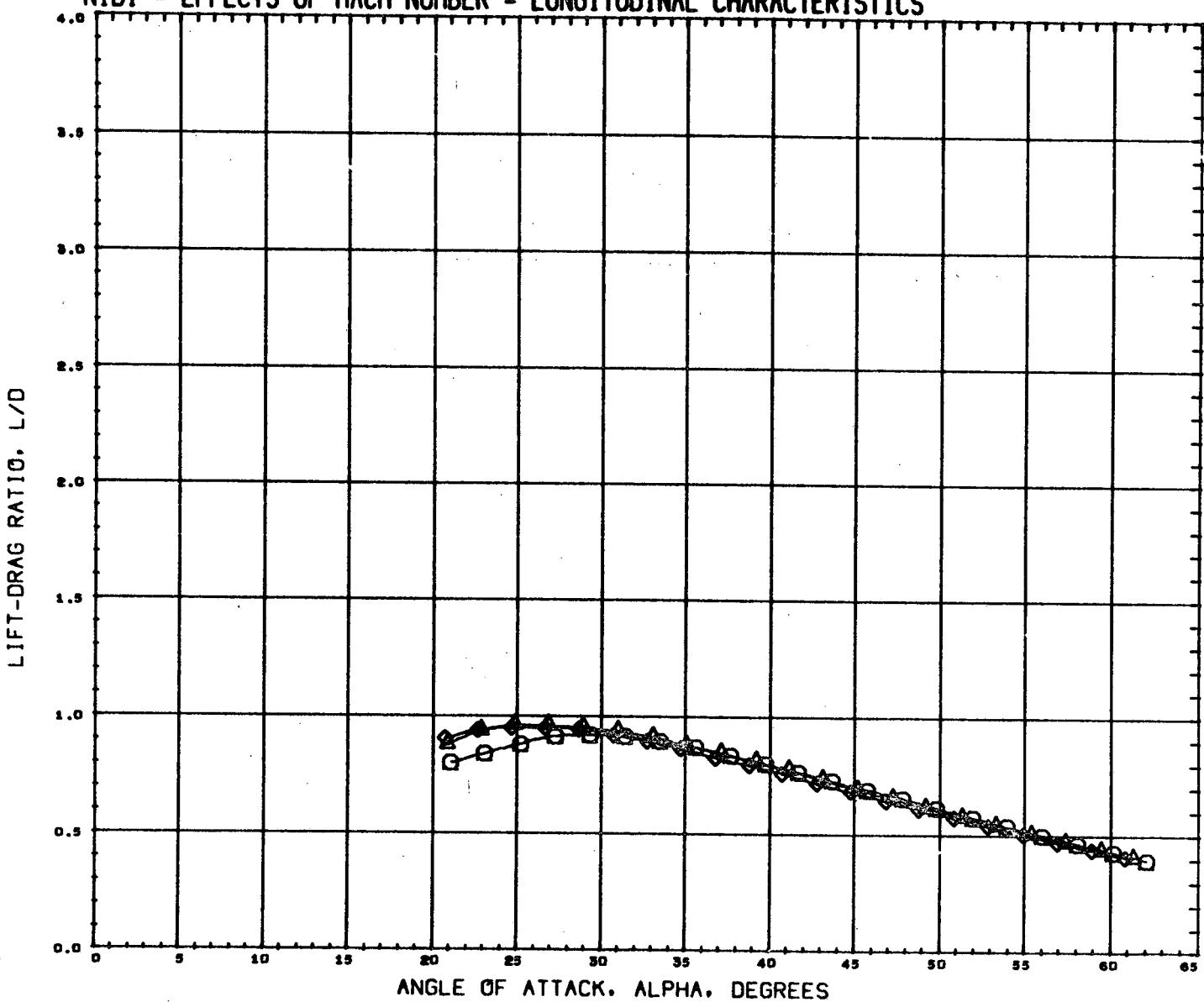


SYMBOL	MACH	BETA	PARAMETRIC VALUES
○	0.600		0.000
△	0.899		
◊	1.101		
□	1.200		

DATA MIST. CODE STV*E*G

REFERENCE INFORMATION		
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REF	7.2230	IN.
REF	7.2230	IN.
MRP	4.3340	IN.
MRP	0.0000	IN.
MRP	0.0000	IN.
CALE	0.0034	

N1B1 - EFFECTS OF MACH NUMBER - LONGITUDINAL CHARACTERISTICS



SYMBOL	MACH	PARAMETRIC VALUES
	1.961	BETA 0.000
	2.740	

REFERENCE INFORMATION		
REF	0.9330	SQ. IN.
REF	7.2230	IN.
REF	7.2230	IN.
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IRP	0.0000	IN.
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CALE	0.0034	

DATA MIST. CODE STVSE*G

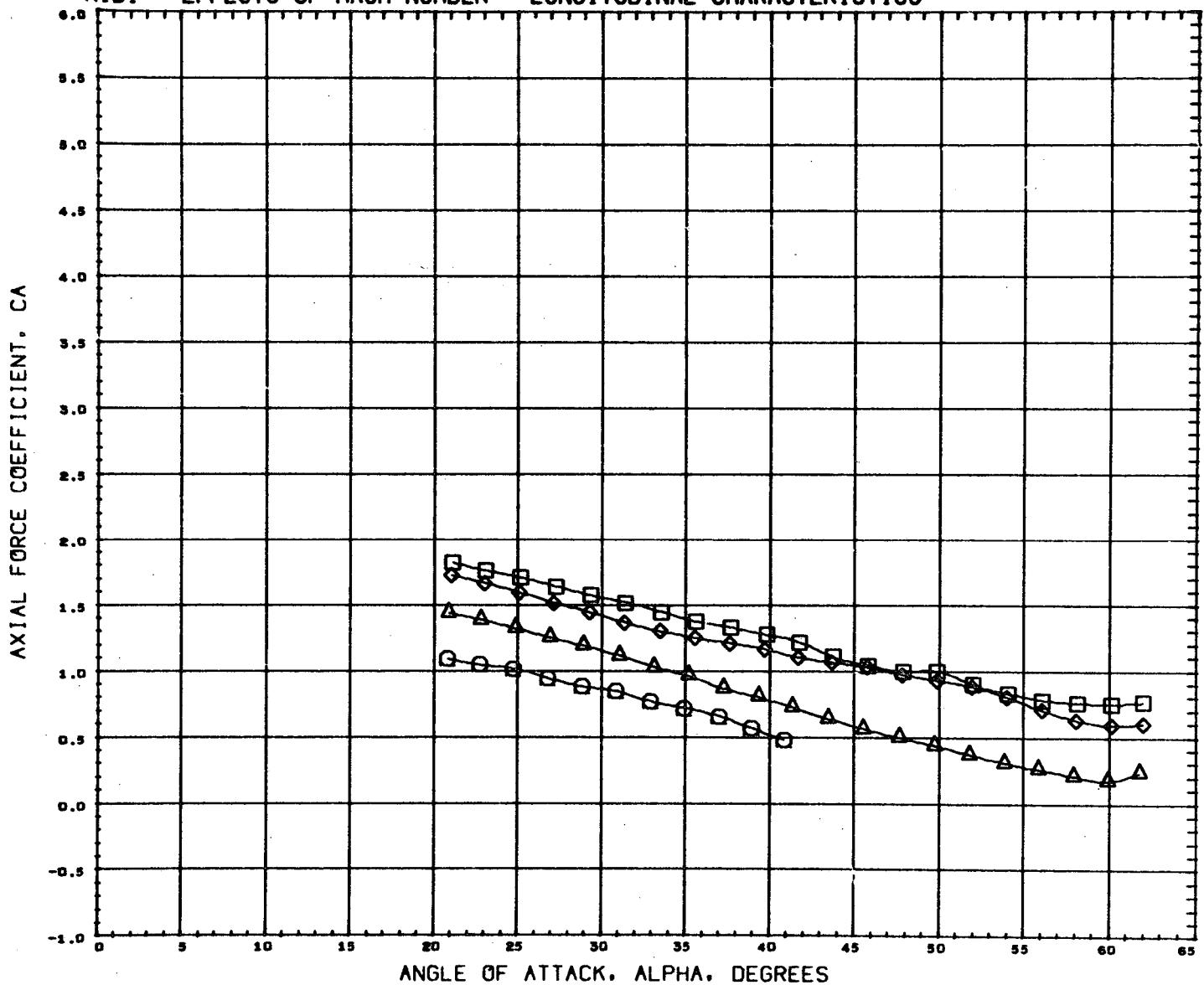
MSFC 518 MSFC PRESSURE FED BOOSTER N1B1

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N1B1 - EFFECTS OF MACH NUMBER - LONGITUDINAL CHARACTERISTICS



SYMBOL	MACH	PARAMETRIC VALUES
○	0.600	BETA 0.000
△	0.699	
◊	1.101	
□	1.200	

DATA MIST. CODE STV*E*G

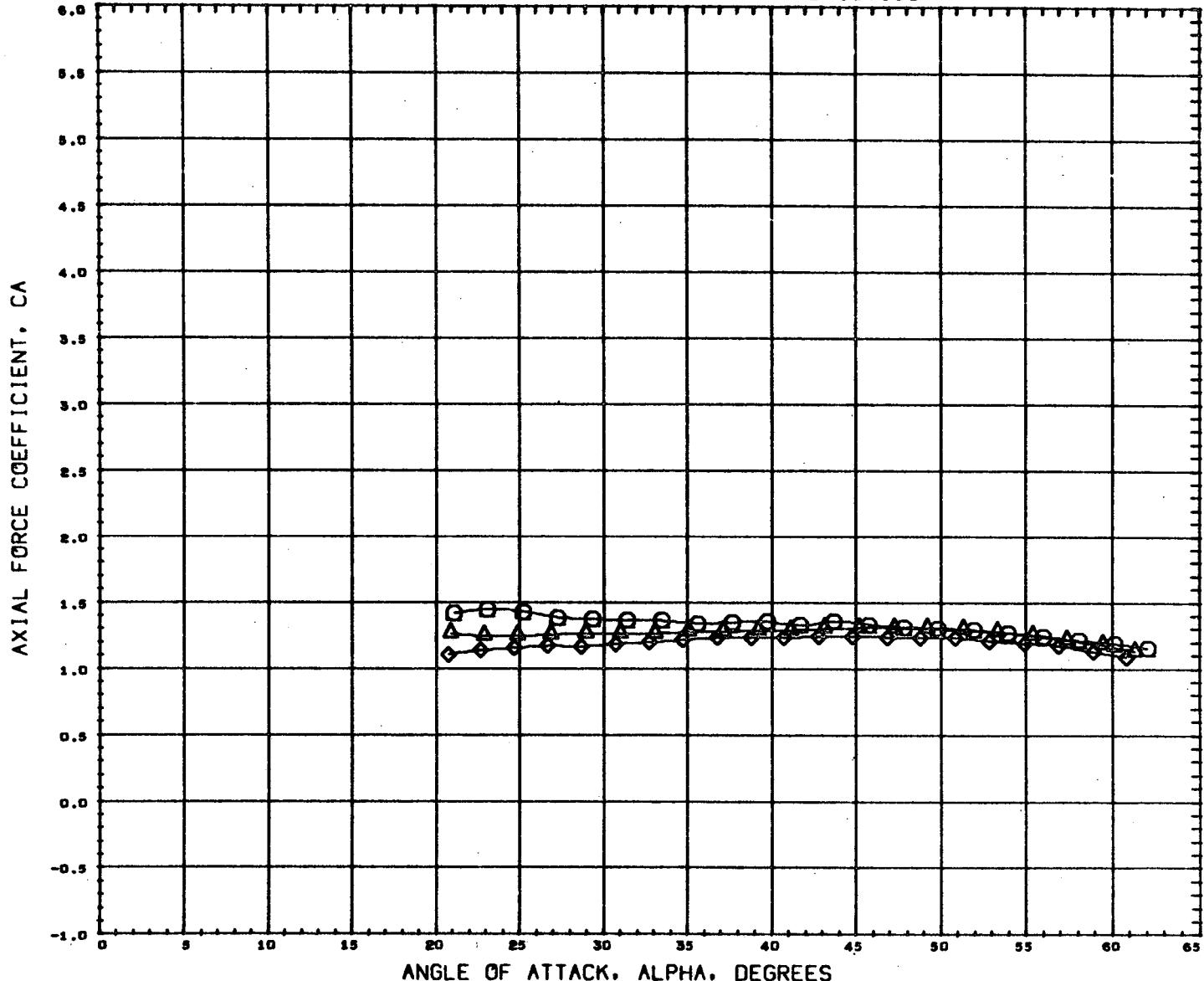
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BREF	7.2230	IN.
XHRP	4.3340	IN.
ZMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

MSFC 518 MSFC PRESSURE FED BOOSTER N1B1

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N1B1 - EFFECTS OF MACH NUMBER - LONGITUDINAL CHARACTERISTICS



SYMBOL	MACH	BETA	PARAMETRIC VALUES
Q	1.961		0.000
A	0.742		

△ 2.740
◇ 4.959

PARAMETRIC VALUES
0.000

REFERENCE INFORMATION		
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REF	7.2230	IN.
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MRP	0.0000	IN.
MRP	0.0000	IN.
CALE	0.0034	

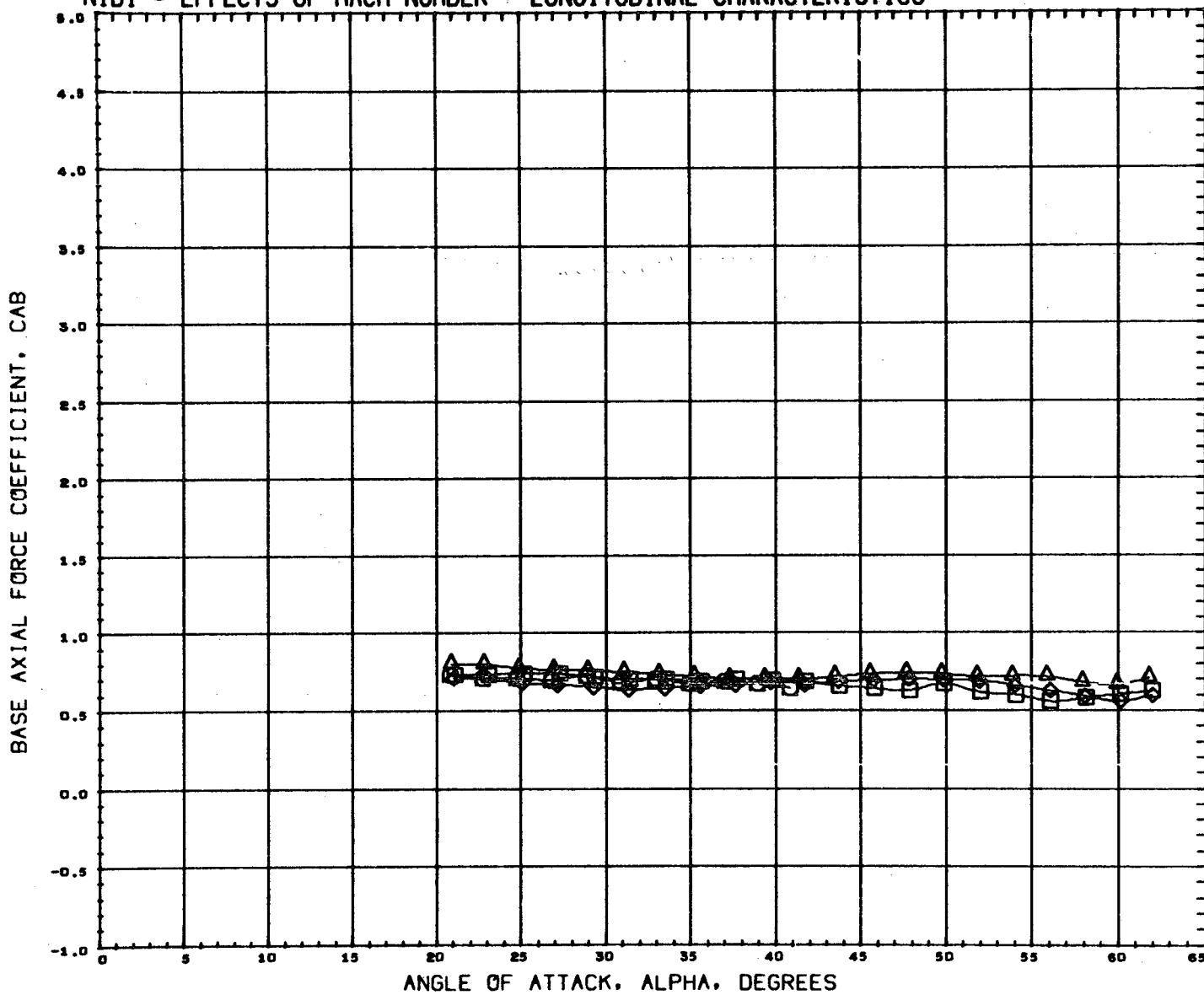
PATA MIST. CODE

MSFC 518 MSFC PRESSURE FED BOOSTER N1B1

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N1B1 - EFFECTS OF MACH NUMBER - LONGITUDINAL CHARACTERISTICS



SYMBOL	MACH	PARAMETRIC VALUES
○	0.600	BETA 0.000
△	0.899	
◊	1.101	
□	1.200	

REFERENCE INFORMATION		
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REF	7.2230	IN.
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H.R.P	0.0000	IN.
CALE	0.0034	

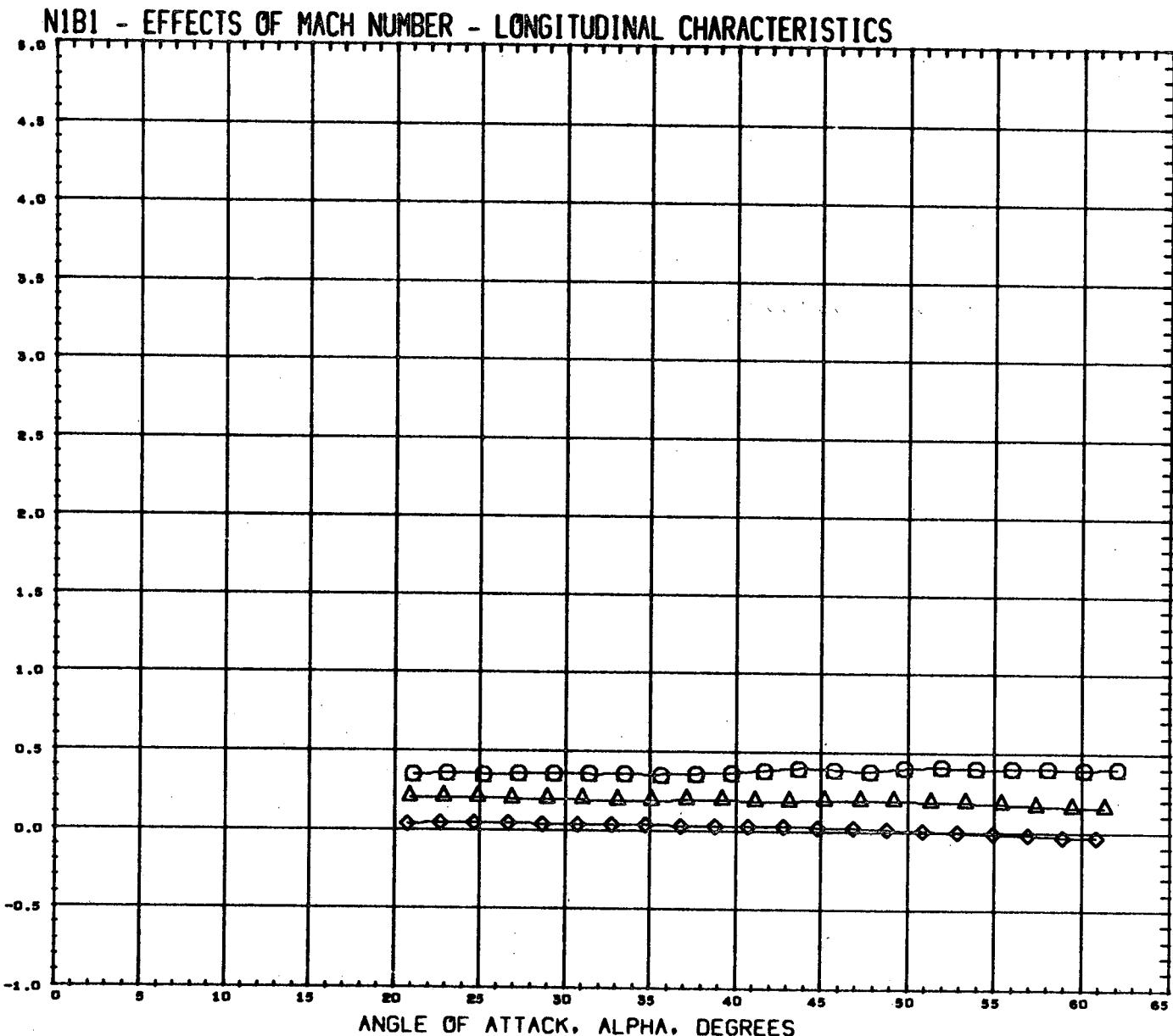
RATA MIST. CODE STV*E*G

MSEC 518 MSFC PRESSURE FED BOOSTER N1B1

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BASE AXIAL FORCE COEFFICIENT, CAB



SYMBOL	MACH	BETA	PARAMETRIC VALUES
O	1.961		0.000
A	2.740		
^	1.950		

REFERENCE INFORMATION		
REF	0.9330	SQ.IN.
REF	7.2230	IN.
REF	7.2230	IN.
HIP	4.3340	IN.
HIP	0.0000	IN.
HIP	0.0000	IN.
CALE	0.0034	

DATA MIST. CODE STV#*G

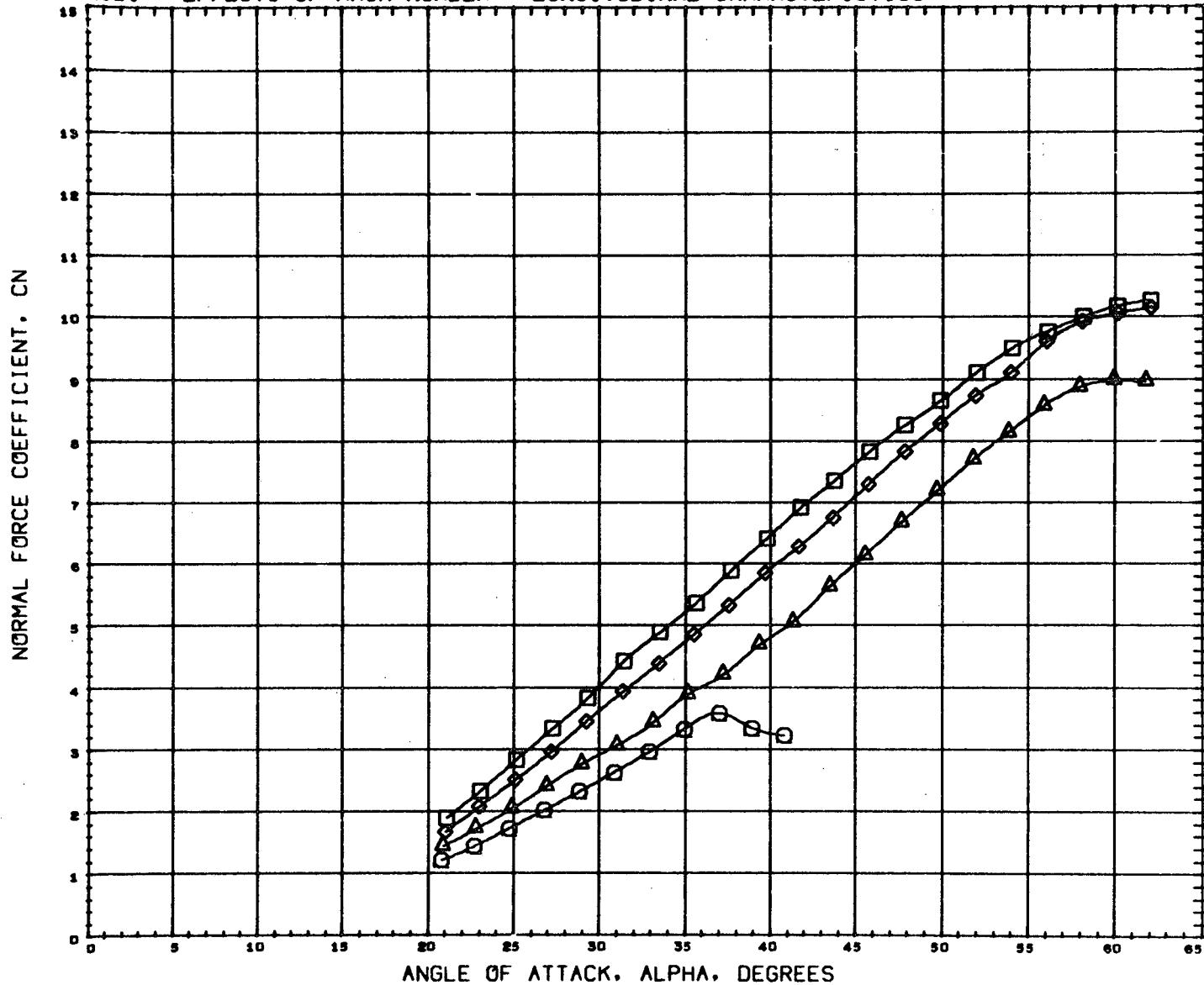
MSFC 518 MSFC PRESSURE FED BOOSTER N1B1

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N1B1 - EFFECTS OF MACH NUMBER - LONGITUDINAL CHARACTERISTICS



SYMBOL	MACH	PARAMETRIC VALUES
○	0.600	BETA
△	0.699	
◊	1.101	
□	1.200	

RATA HIST. CODE STYLED

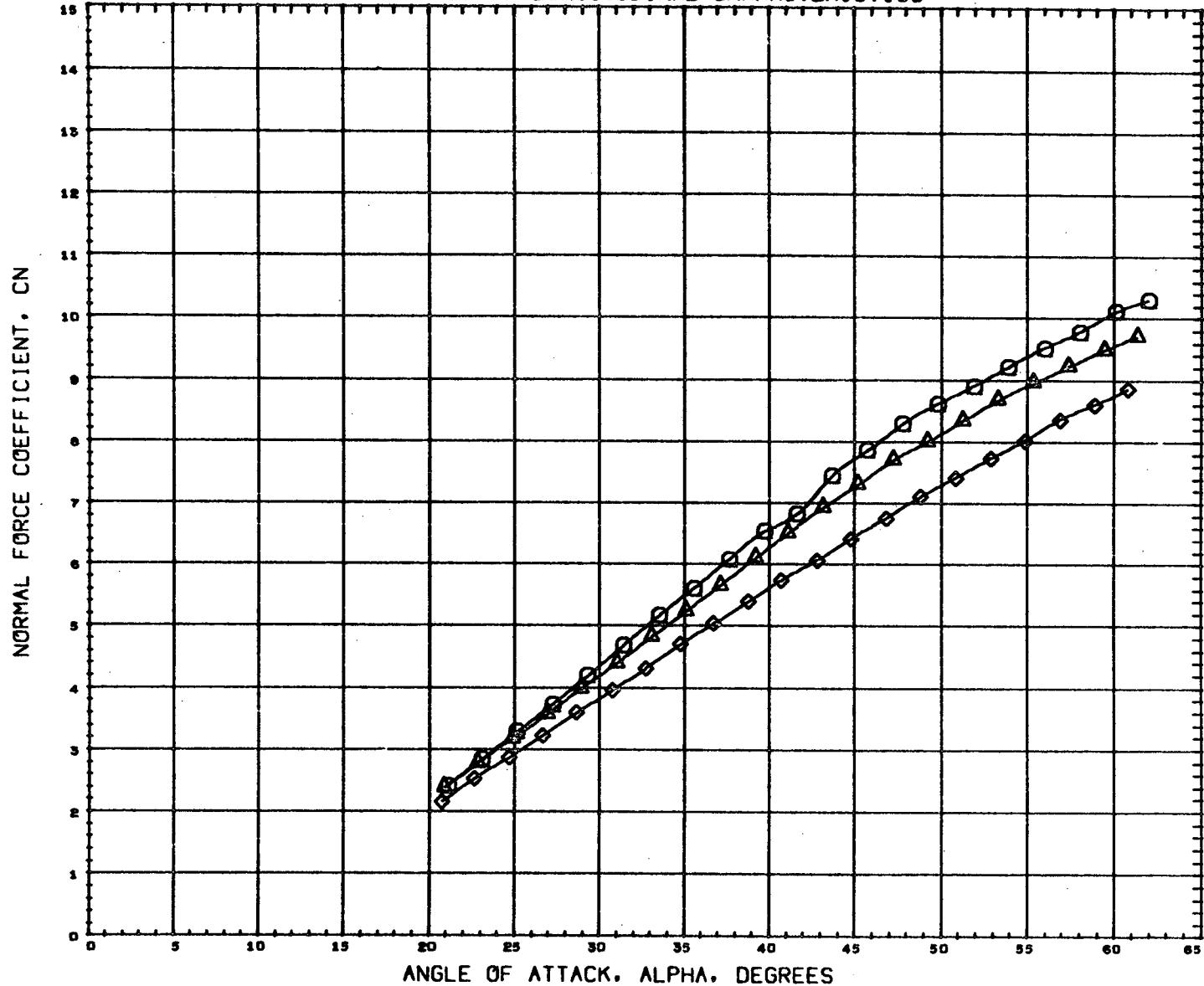
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REF	7.2230	IN.
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MRP	0.0000	IN.
MRP	0.0000	IN.
CALE	0.0034	

MSFC 518 MSFC PRESSURE FED BOOSTER N1B1

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N1B1 - EFFECTS OF MACH NUMBER - LONGITUDINAL CHARACTERISTICS



SYMBOL	MACH		PARAMETRIC VALUES	REFERENCE INFORMATION		
	1.961	2.740		4.959	SREF	LREF
			0.000	0.9330	IN.	IN.
				7.2230		IN.
				7.2230		IN.
				4.3340		IN.
				0.0000		IN.
				0.0000		IN.
				0.0034		

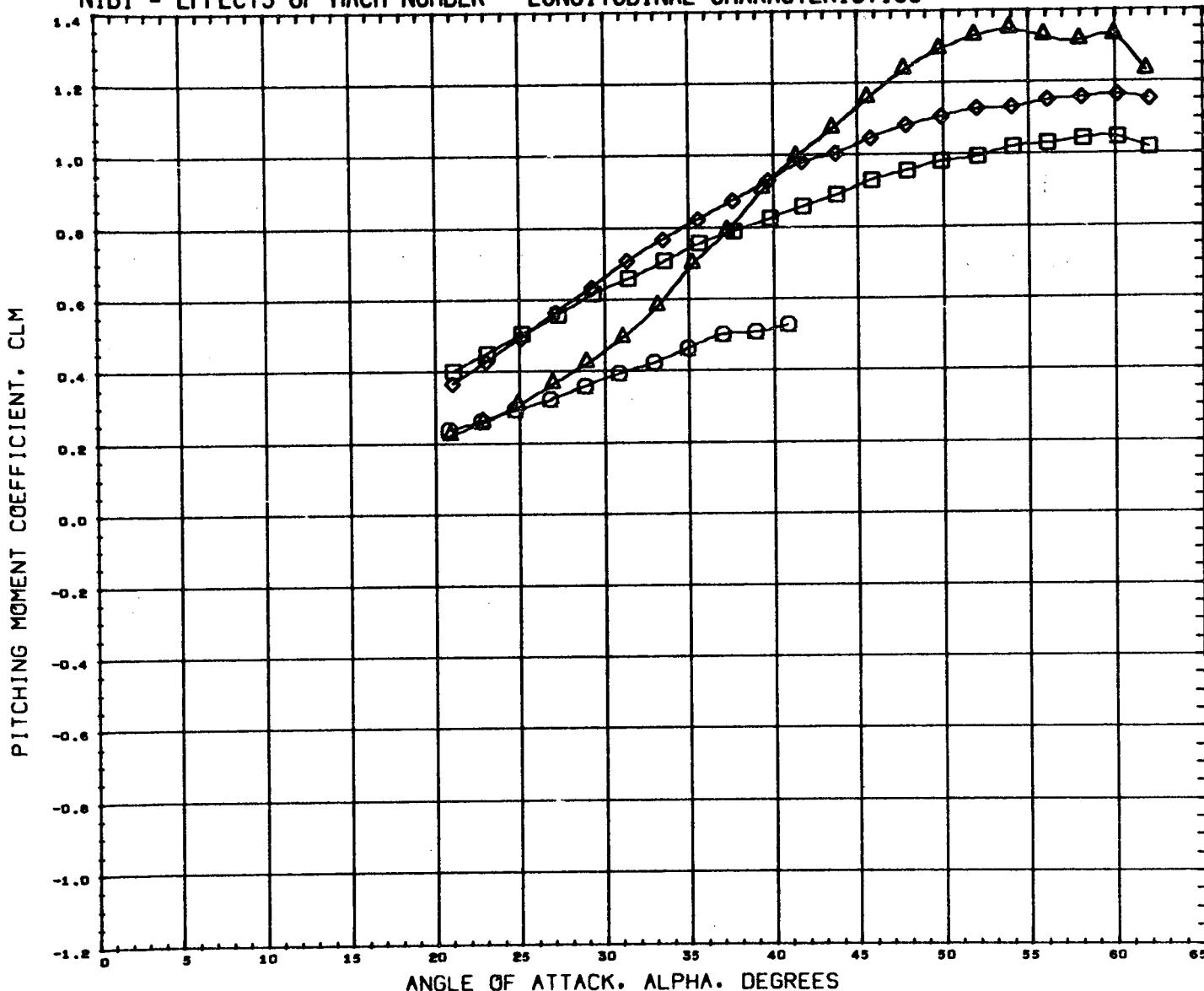
DATA MAST. CODE STV#E6G

MSFC 518 MSFC PRESSURE FED BOOSTER N1B1

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N1B1 - EFFECTS OF MACH NUMBER - LONGITUDINAL CHARACTERISTICS



SYMBOL	MACH	PARAMETRIC VALUES	
		BETA	0.000
○	0.600		
△	0.899		
◊	1.101		
□	1.200		

DATA HIST. CORE

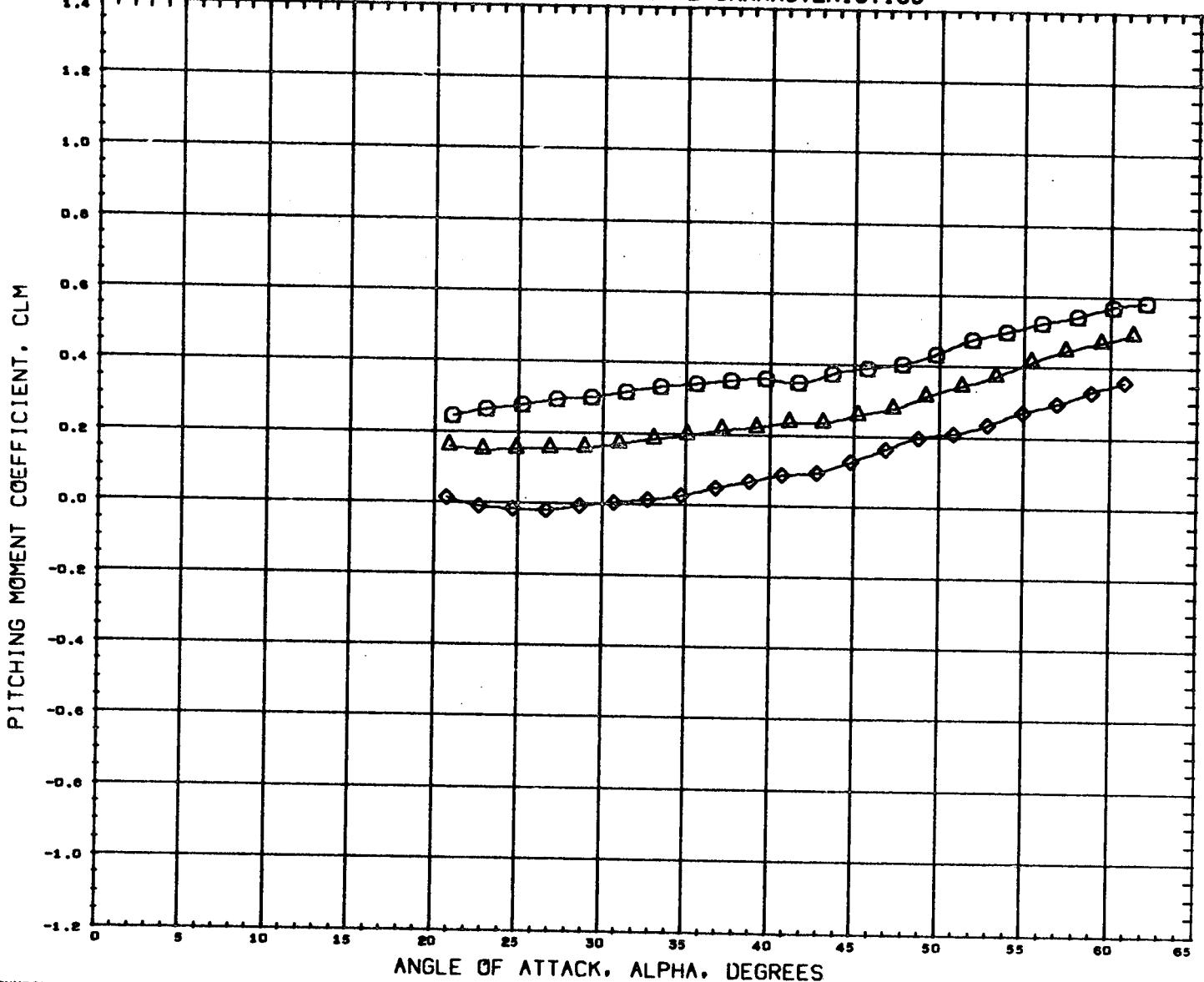
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MRP	0.0000	IN.
MRP	0.0000	IN.
CALE	0.0034	

MSFC 518 MSFC PRESSURE FED BOOSTER N1B1

(154901) 22 DEC 71

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N1B1 - EFFECTS OF MACH NUMBER - LONGITUDINAL CHARACTERISTICS



SYMBOL	MACH	PARAMETRIC VALUES
	1.961	BETA 0.000
	2.740	

REFERENCE INFORMATION		
REF	0.9330	SQ. IN.
REF	7.2230	IN.
REF	7.2230	IN.
IRP	4.3340	IN.
IRP	0.0000	IN.
IRP	0.0000	IN.
CALE	0.0034	

DATA HIST. CODE STV*E*G

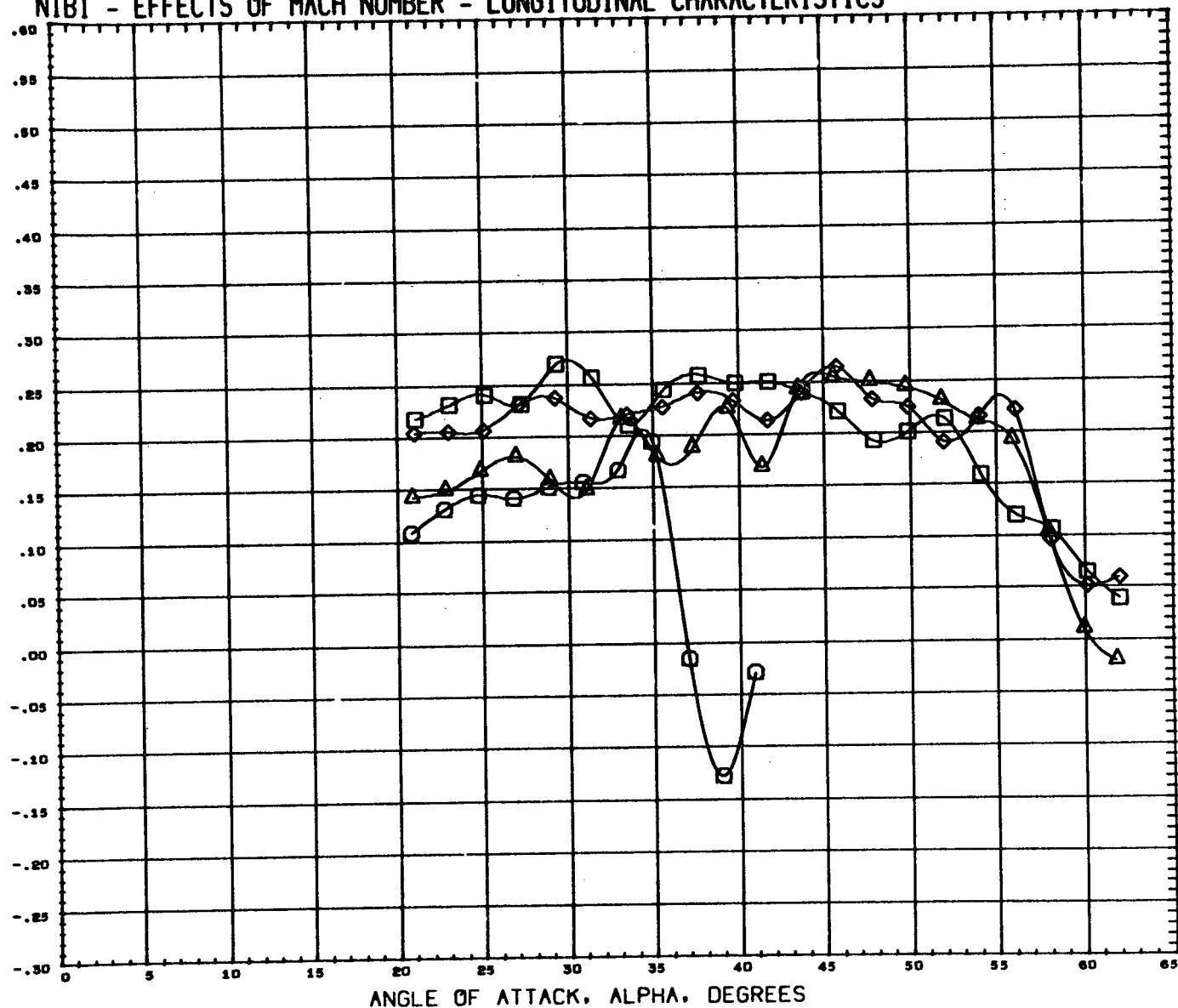
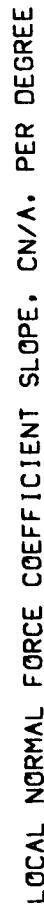
MSFC 518 MSFC PRESSURE FED BOOSTER N1B1

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N1B1 - EFFECTS OF MACH NUMBER - LONGITUDINAL CHARACTERISTICS.



SYMBOL	MACH	PARAMETRIC VALUES
○	0.600	BETA 0.000
△	0.699	
◊	1.101	
□	1.200	

DATA MIST. CODE STV*E*G

MSFC 518 MSFC PRESSURE FED BOOSTER N1B1

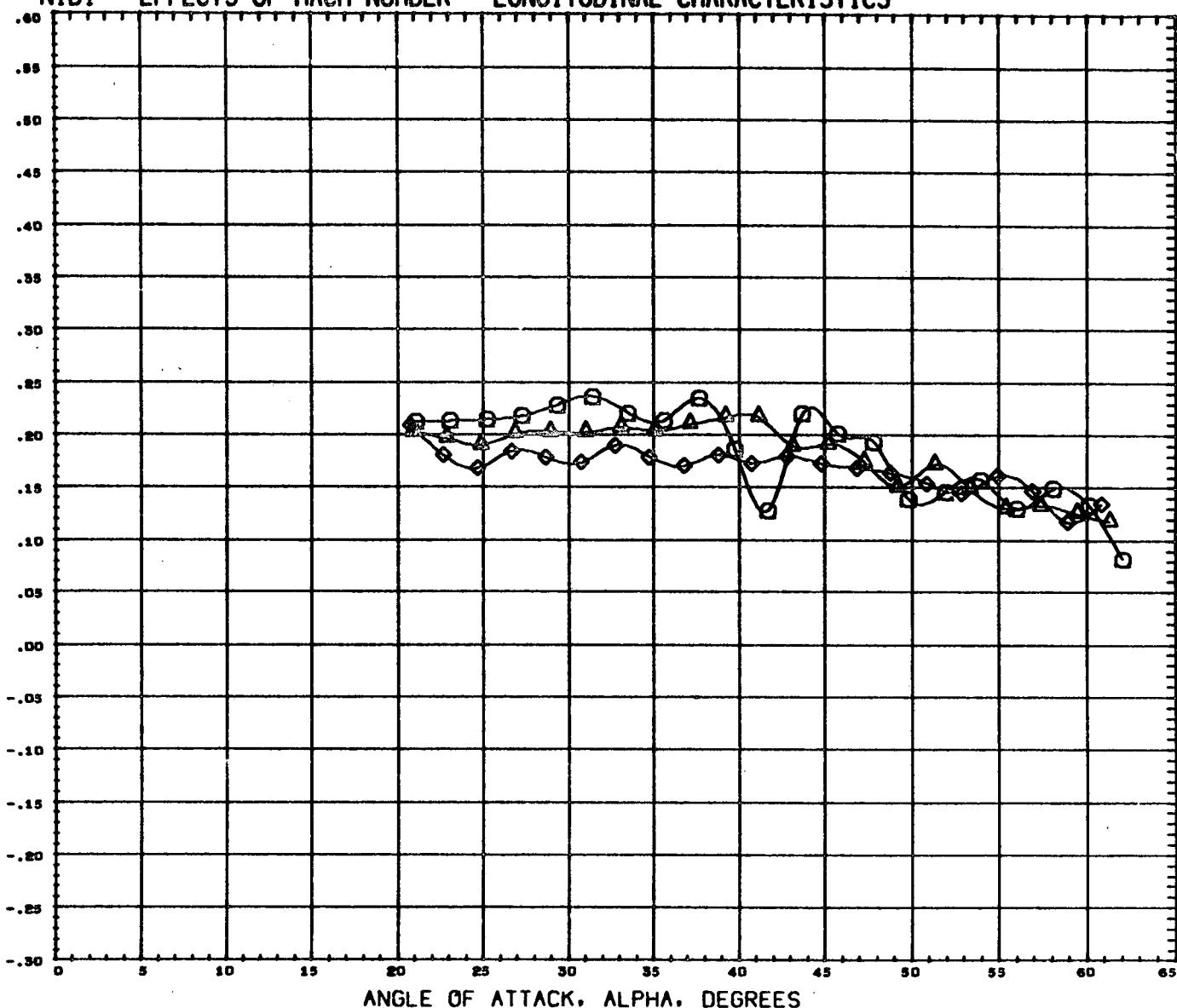
(154901) 22 DEC 71

REFERENCE INFORMATION

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EF	7.2230	in.
EF	7.2230	in.
IRP	4.3340	in.
IRP	0.0000	in.
IRP	0.0000	in.
CALE	0.0034	

N1B1 - EFFECTS OF MACH NUMBER - LONGITUDINAL CHARACTERISTICS

LOCAL NORMAL FORCE COEFFICIENT SLOPE, CN/A, PER DEGREE



SYMBOL MACH
 \diamond 1.961 BETA
 2.740
 4.959

PARAMETRIC VALUES
 0.000

DATA MIST. CODE STV*E*G

MSFC 518 MSFC PRESSURE FED BOOSTER N1B1

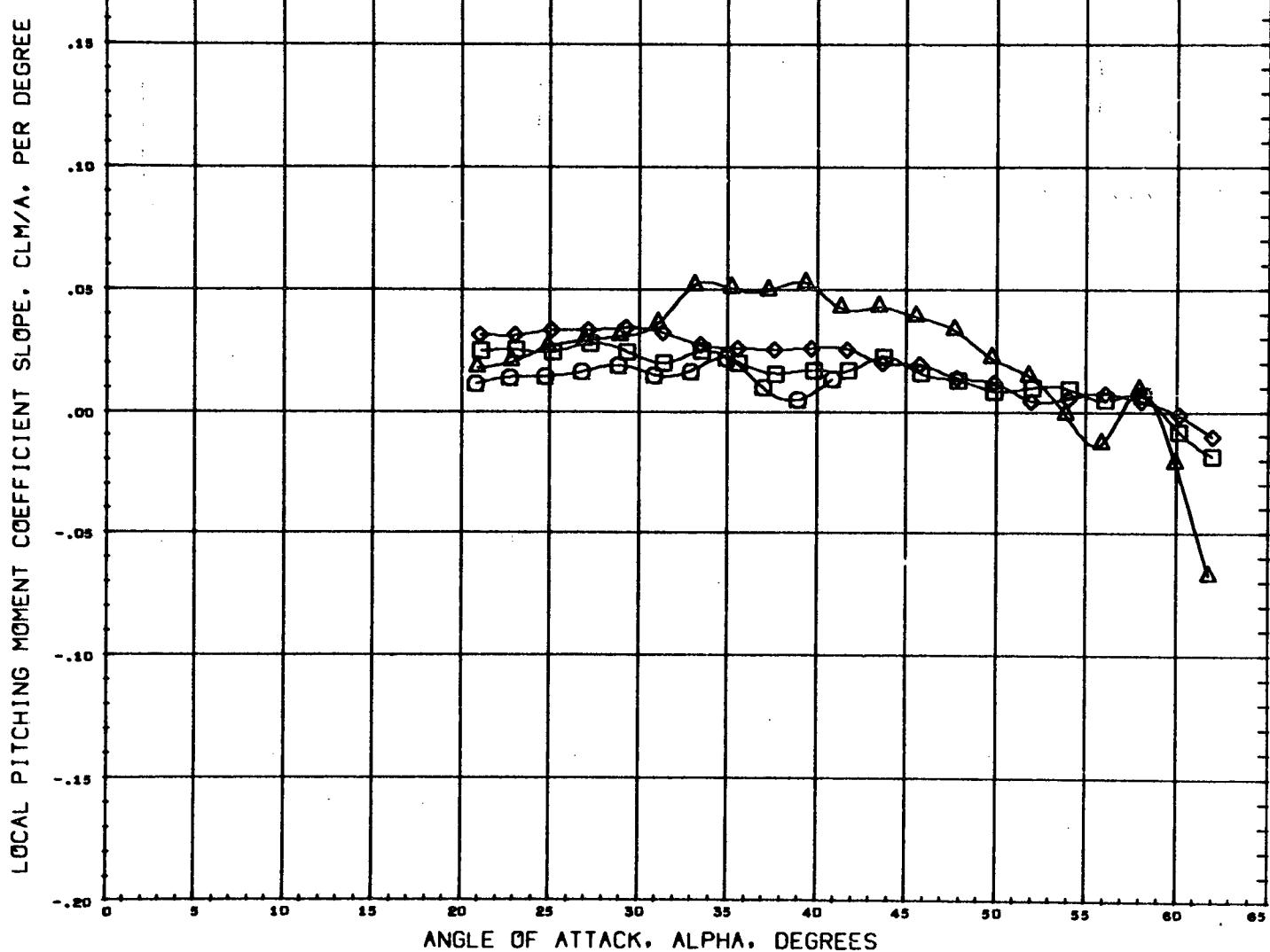
(154901) 22 DEC 71

REFERENCE INFORMATION		
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LREF	7.2230	IN.
BREF	7.2230	IN.
XMRP	4.3340	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

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N1B1 - EFFECTS OF MACH NUMBER - LONGITUDINAL CHARACTERISTICS



SYMBOL	MACH	PARAMETRIC VALUES
○	0.600	BETA 0.000
△	0.699	
◊	.101	
□	1.200	

DATA HIST. CODE STV*E*G

REFERENCE INFORMATION		
REF	0.9330	SQ.IN.
REF	7.2230	IN.
REF	7.2230	IN.
MRP	4.3340	IN.
MRP	0.0000	IN.
MRP	U.0000	IN.
CALE	0.0034	

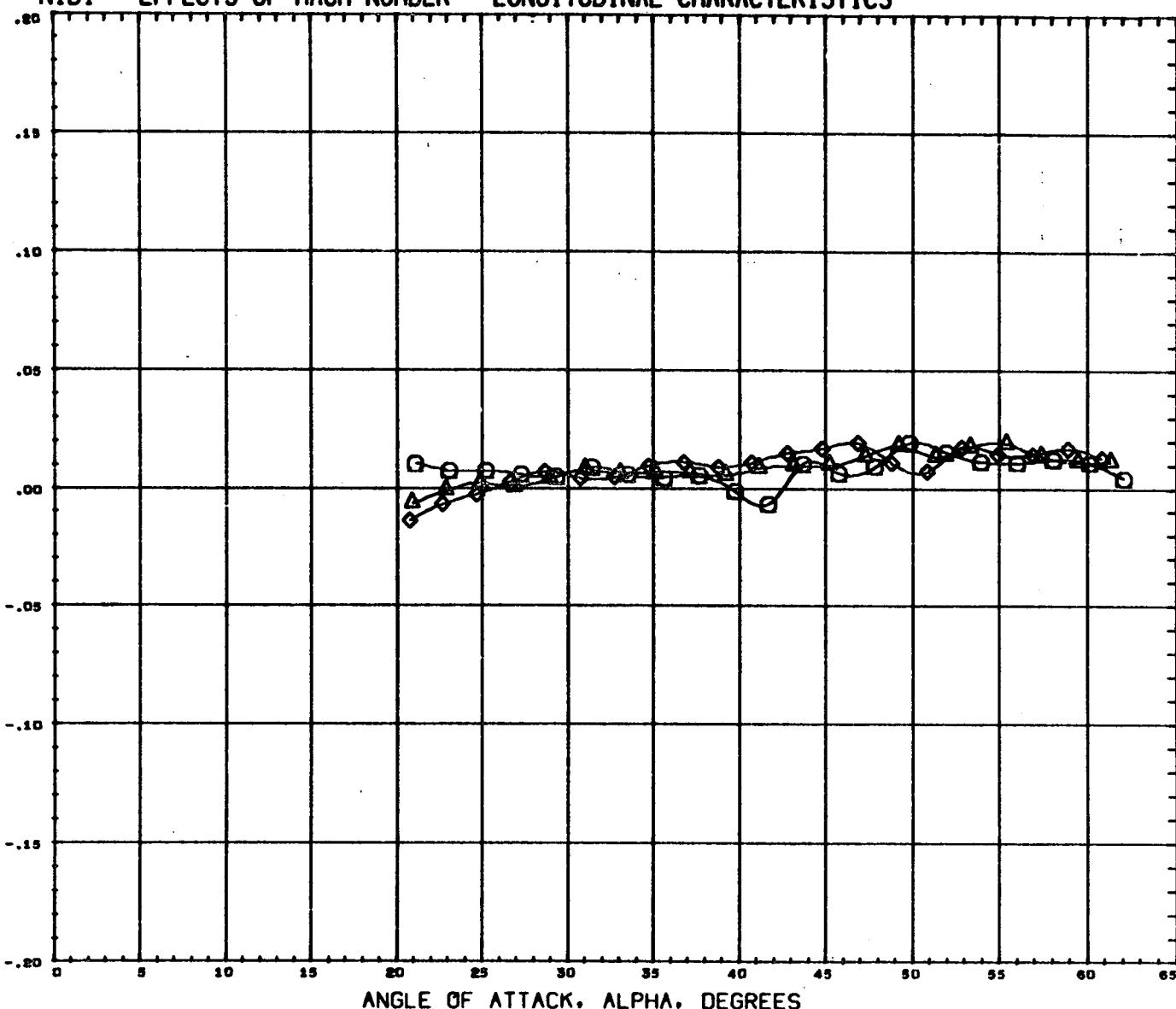
MSFC 518 MSFC PRESSURE FED BOOSTER N1B1

(154901) 22 DEC 71

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N1B1 - EFFECTS OF MACH NUMBER - LONGITUDINAL CHARACTERISTICS

LOCAL PITCHING MOMENT COEFFICIENT SLOPE, CLM/A, PER DEGREE



SYMBOL	MACH	BETA	PARAMETRIC VALUES
○	1.961		0.000
△	2.740		
◊	4.959		

DATA MIST. CODE STV*E*G

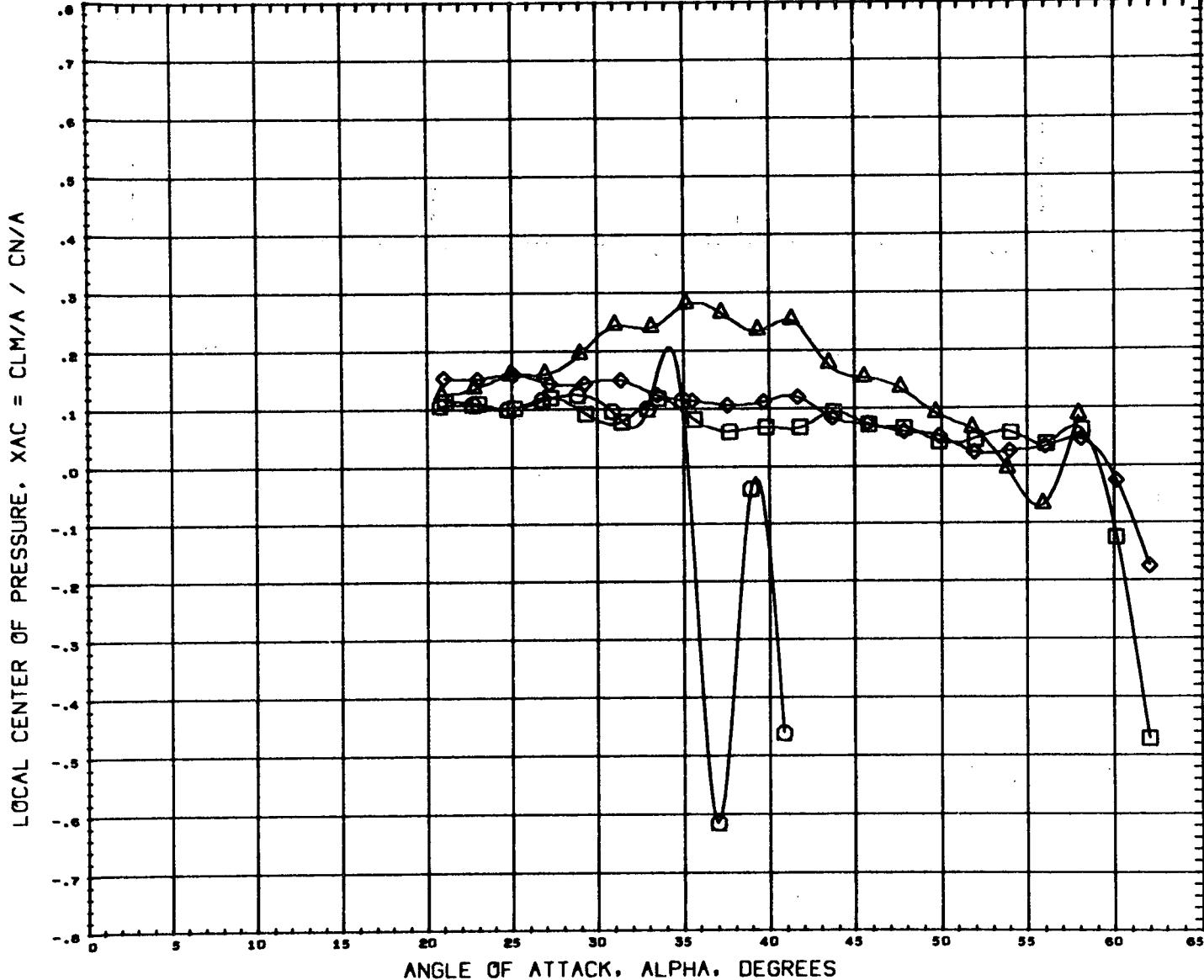
MSFC 518 MSFC PRESSURE FED BOOSTER N1B1

(154901) 22 DEC 71

REFERENCE INFORMATION		
SREF	0.9350	SQ. IN.
LREF	7.2230	IN.
BREF	7.2230	IN.
XMRP	4.3340	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

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N1B1 - EFFECTS OF MACH NUMBER - LONGITUDINAL CHARACTERISTICS



SYMBOL	MACH	PARAMETRIC VALUES
○	0.600	BETA
△	0.699	
◊	1.101	D.000
□	1.200	

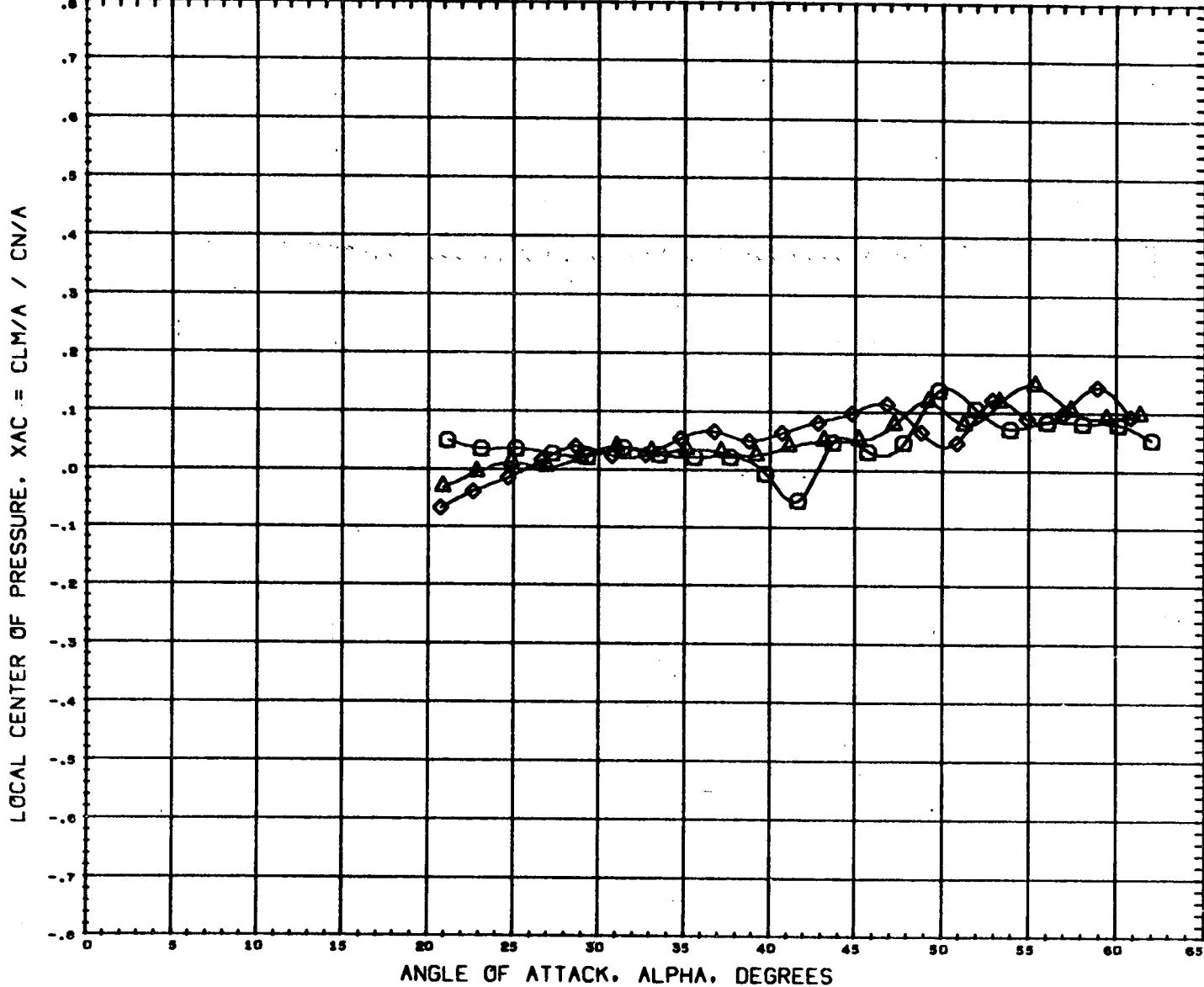
DATA HIST. CODE SGC*G*G

MSFC 518 MSFC PRESSURE FED BOOSTER N1B1

(Q54901) 22 DEC 71

REFERENCE INFORMATION		
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LREF	7.2230	IN.
BREF	7.2230	IN.
XMRP	4.3340	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

N1B1 - EFFECTS OF MACH NUMBER - LONGITUDINAL CHARACTERISTICS



SYMBOL	MACH	PARAMETRIC VALUES
	1.961	BETA
	2.740	0.000
	1.960	

REFERENCE INFORMATION		
REF	0.9330	SQ.IN.
REF	7.2230	IN.
REF	7.2230	IN.
MRP	4.3340	IN.
MRP	0.0000	IN.
MRP	0.0000	IN.
CALE	0.0034	

DATA MIST. CODE

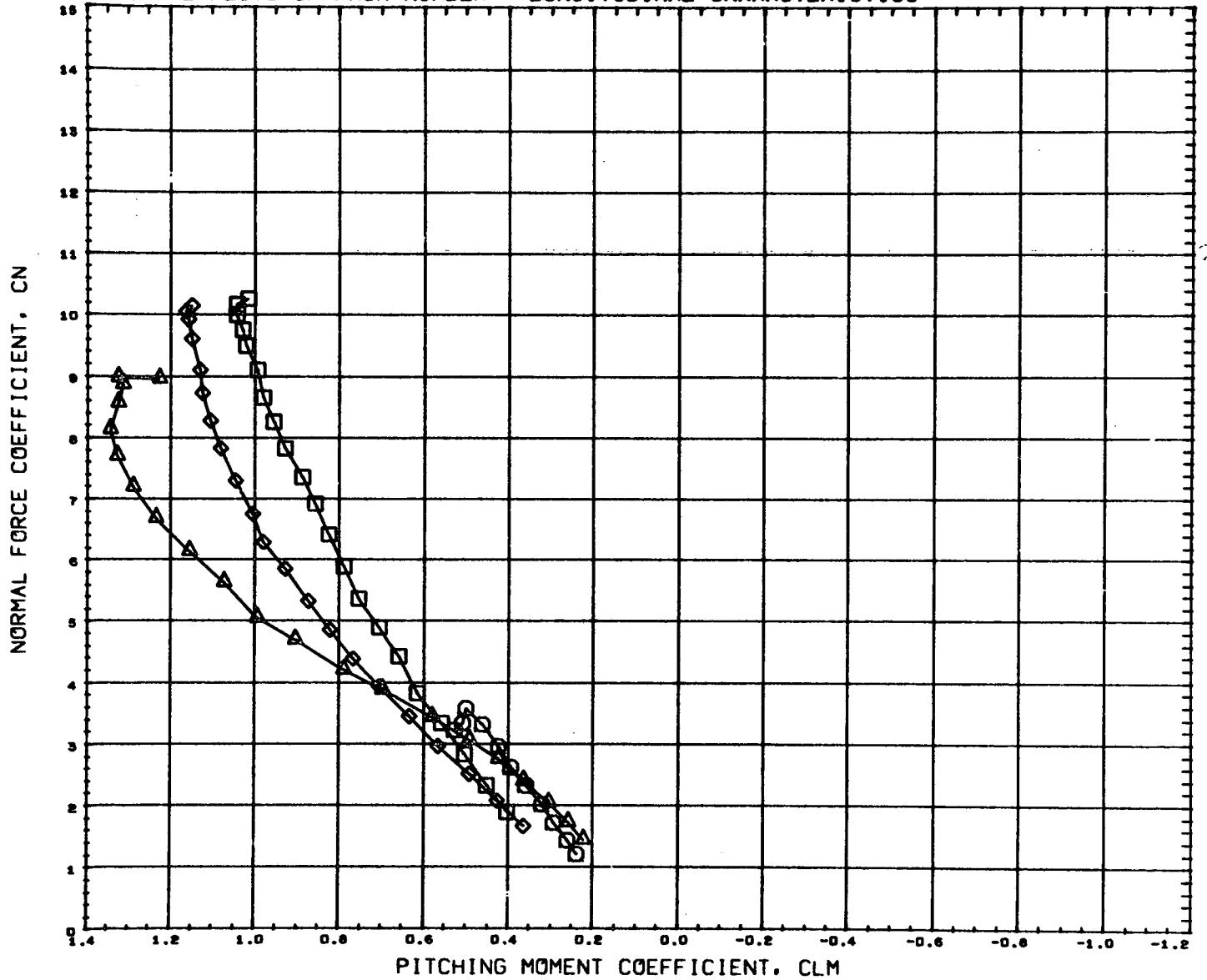
MSFC 518 MSFC PRESSURE FED BOOSTER N1B1

(Q54901) 22 DEC 71

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N1B1 - EFFECTS OF MACH NUMBER - LONGITUDINAL CHARACTERISTICS



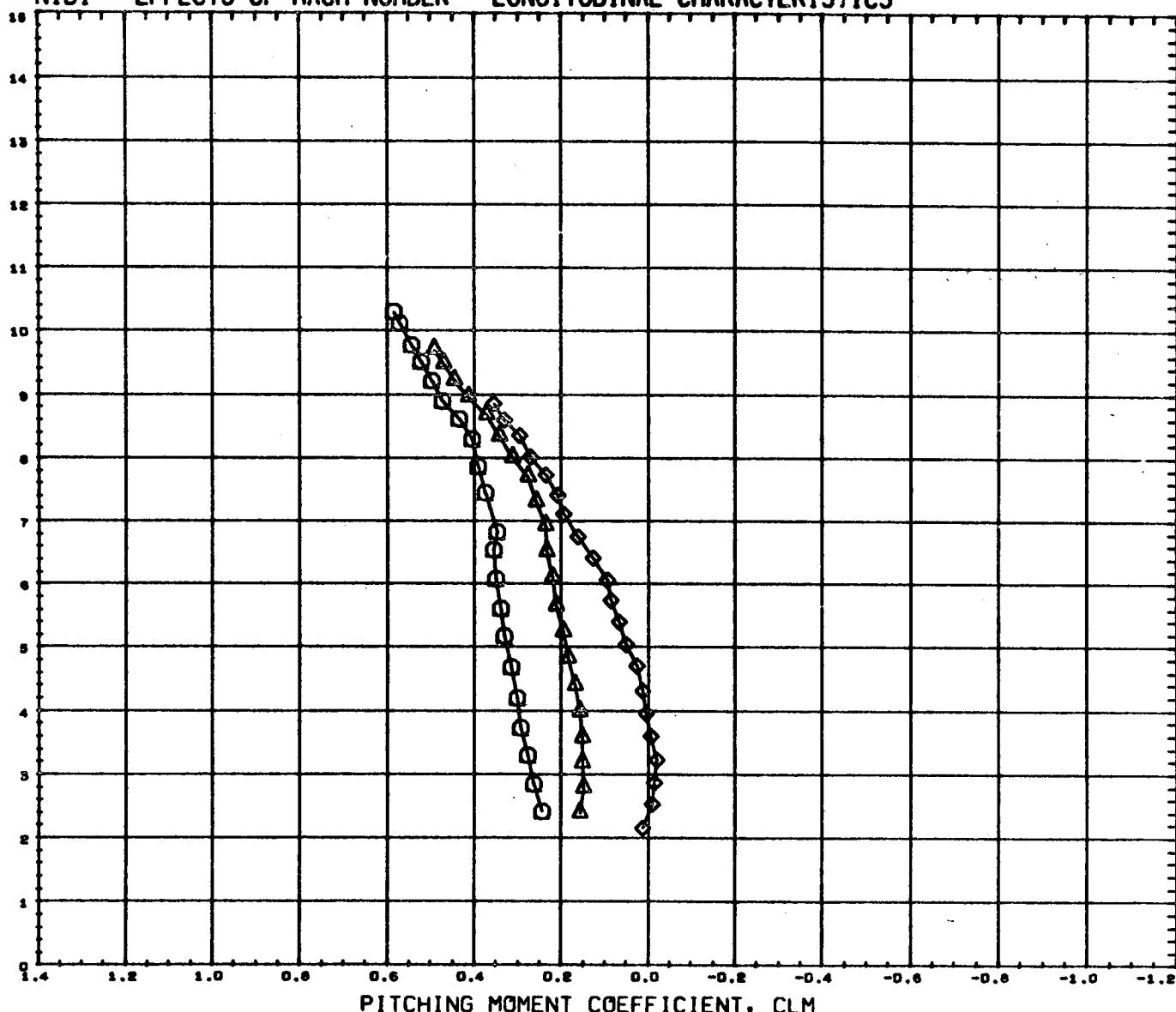
SYMBOL	MACH	PARAMETRIC VALUES
○	0.600	BETA 0.000
△	0.699	
◊	1.101	
□	1.200	

DATA HIST. CODE STV+EBC

REFERENCE INFORMATION		
SREF	0.9330	IN.
LREF	7.2230	IN.
BREF	7.2230	IN.
XMRP	4.3340	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	IN.

N1B1 - EFFECTS OF MACH NUMBER - LONGITUDINAL CHARACTERISTICS

NORMAL FORCE COEFFICIENT, CN



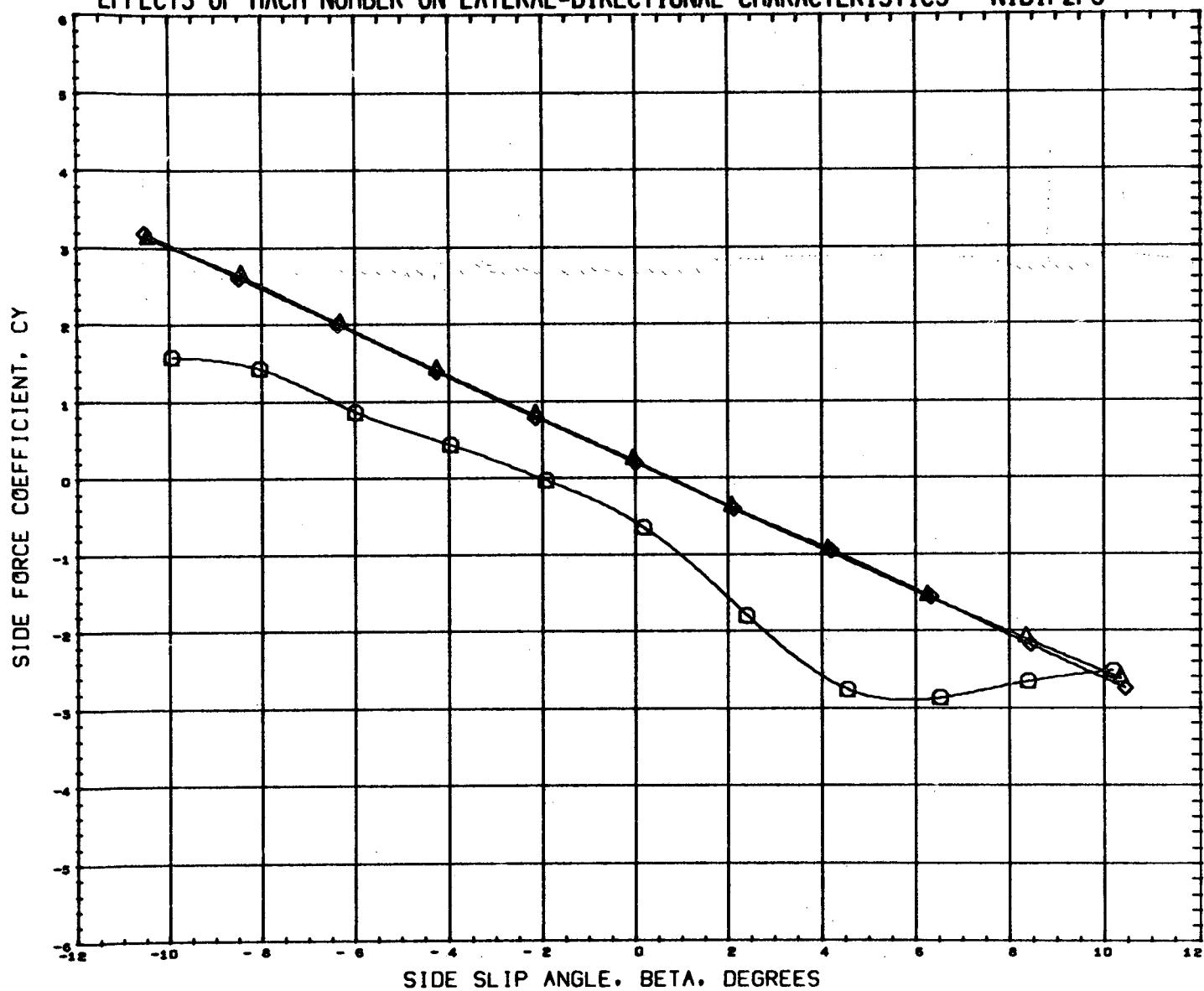
PITCHING MOMENT COEFFICIENT, CLM

SYMBOL MACH PARAMETRIC VALUES
 ◊ 1.961 BETA 0.000
 △ 2.740
 ◇ 4.959

DATA MIST. CODE STV*EFG

REFERENCE INFORMATION
 SREF 0.9330 SQ. IN.
 LREF 7.2230 IN.
 BREF 7.2230 IN.
 XMRP 4.3340 IN.
 YMRP 0.0000 IN.
 ZMRP 0.0000 IN.
 SCALE 0.0034 IN.

EFFECTS OF MACH NUMBER ON LATERAL-DIRECTIONAL CHARACTERISTICS - N1B1F2F3



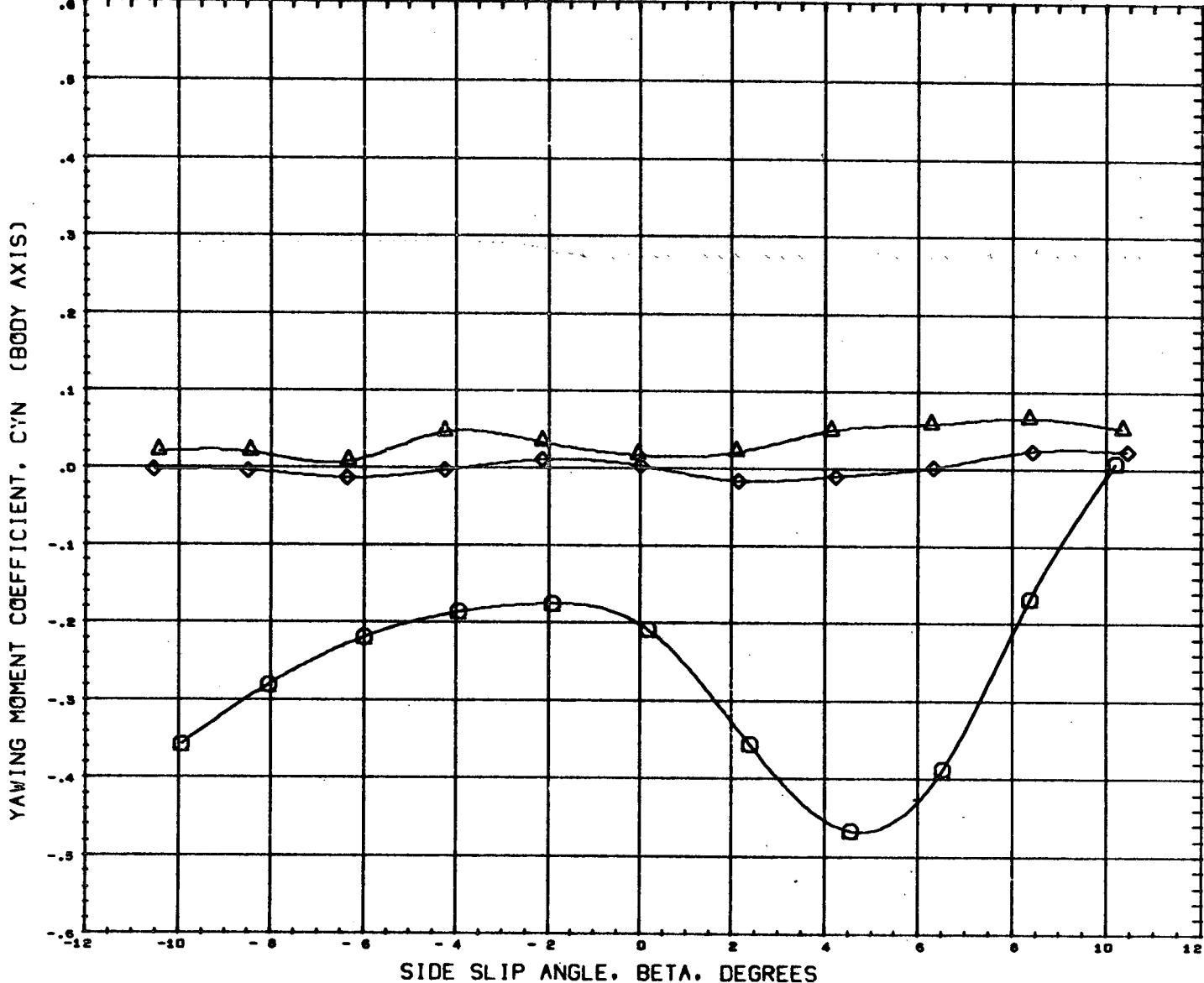
SYMBOL	MACH	PARAMETRIC VALUES
	0.602	ALPHA 30.000 DHDRL 30.000
	0.900	
	1.198	

REFERENCE INFORMATION		
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EF	7.2230	IN.
EF	7.2230	IN.
RP	4.3340	IN.
RP	0.0000	IN.
RP	0.0000	IN.
ALE	0.0034	

DATA HIST. CODE S

MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F2F3 (S54025) 22 DEC 71 PAGE 95

EFFECTS OF MACH NUMBER ON LATERAL-DIRECTIONAL CHARACTERISTICS - N1B1F2F3



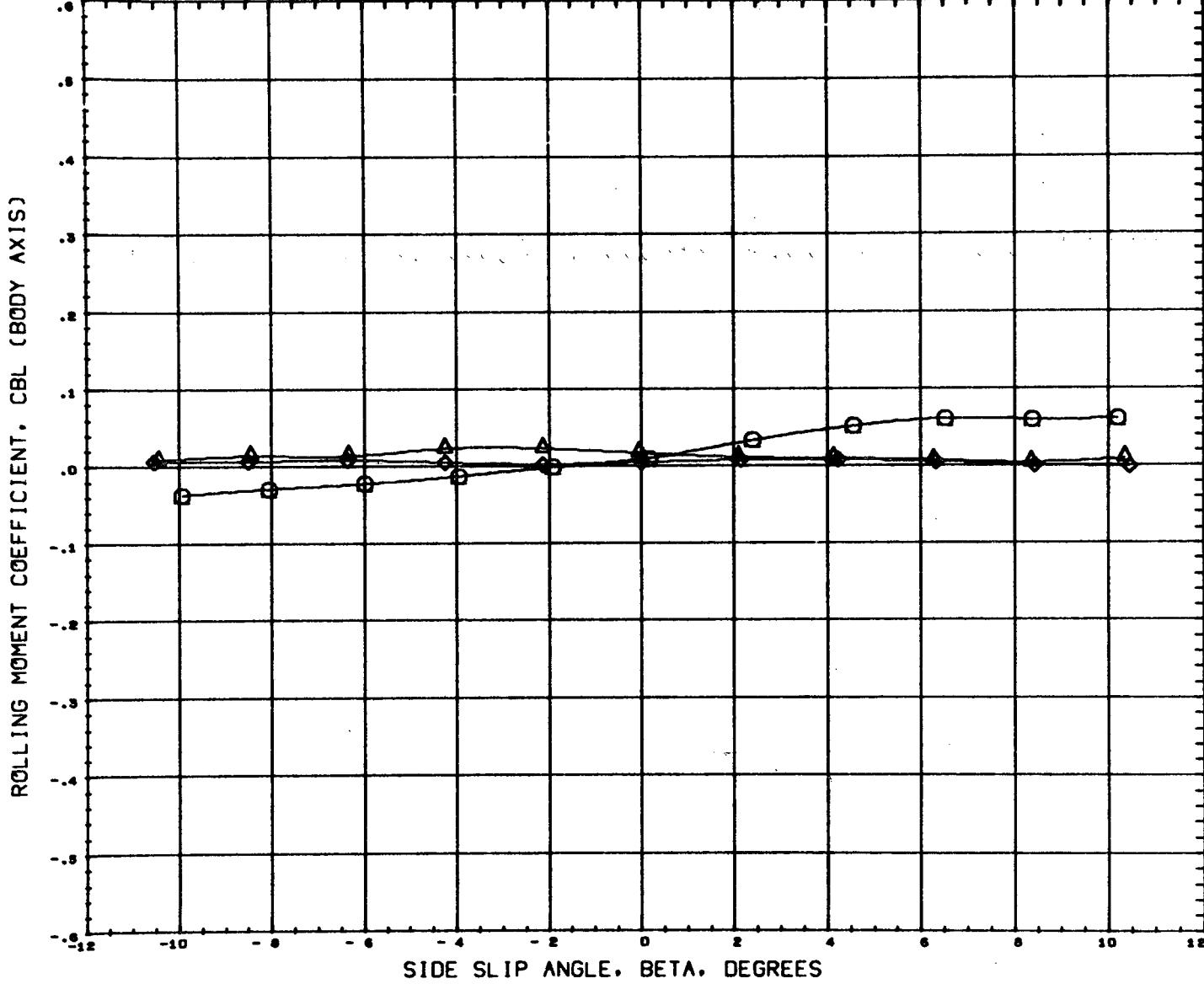
SYMBOL	MACH	PARAMETRIC VALUES
O	0.602	ALPHA 30.000 DIHDLR 30.000
△	0.900	
◊	1.198	

REFERENCE INFORMATION		
REF	0.9330	SQ. IN.
REF	7.2230	IN.
REF	7.2230	IN.
MNR	4.3340	IN.
MNR	0.0000	IN.
MNR	0.0000	IN.
CALE	0.0034	

DATA HIST. CODE S

MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F2F3 (S54025) 22 DEC 71 PAGE 98

EFFECTS OF MACH NUMBER ON LATERAL-DIRECTIONAL CHARACTERISTICS - N1B1F2F3



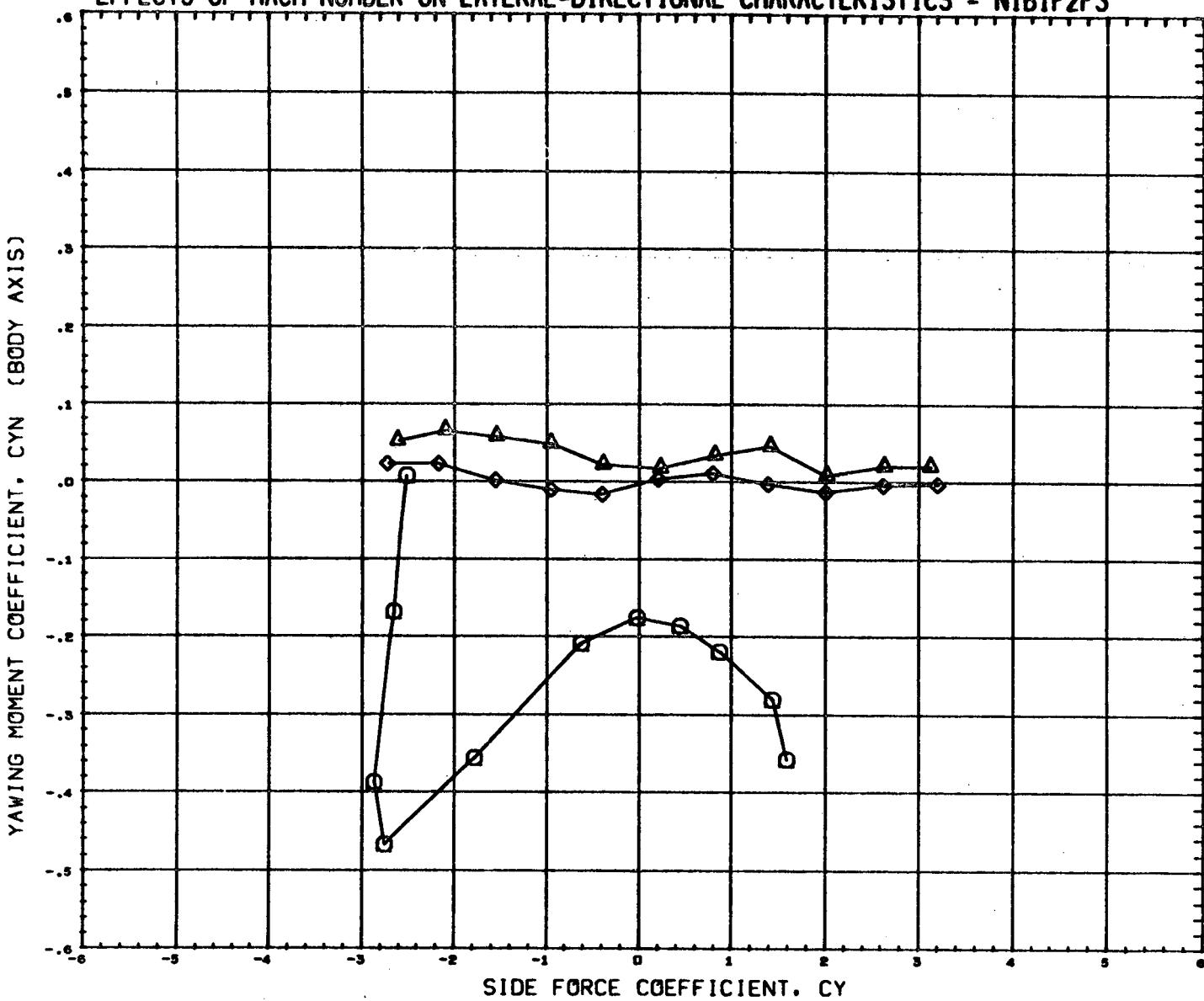
SYMBOL	MACH	PARAMETRIC VALUES
	0.602	ALPHA 30.000 DIMDRLL 30.000
	0.900	
	1.198	

REFERENCE INFORMATION		
REF	0.9330	SG. IN.
REF	7.2230	IN.
REF	7.2230	IN.
MRP	4.3340	IN.
MRP	0.0000	IN.
MRP	0.0000	IN.
CALE	0.0034	

DATA HIST. COOE 3

MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F2F3 (S54025) 22 DEC 71 PAGE 97

EFFECTS OF MACH NUMBER ON LATERAL-DIRECTIONAL CHARACTERISTICS - N1B1F2F3



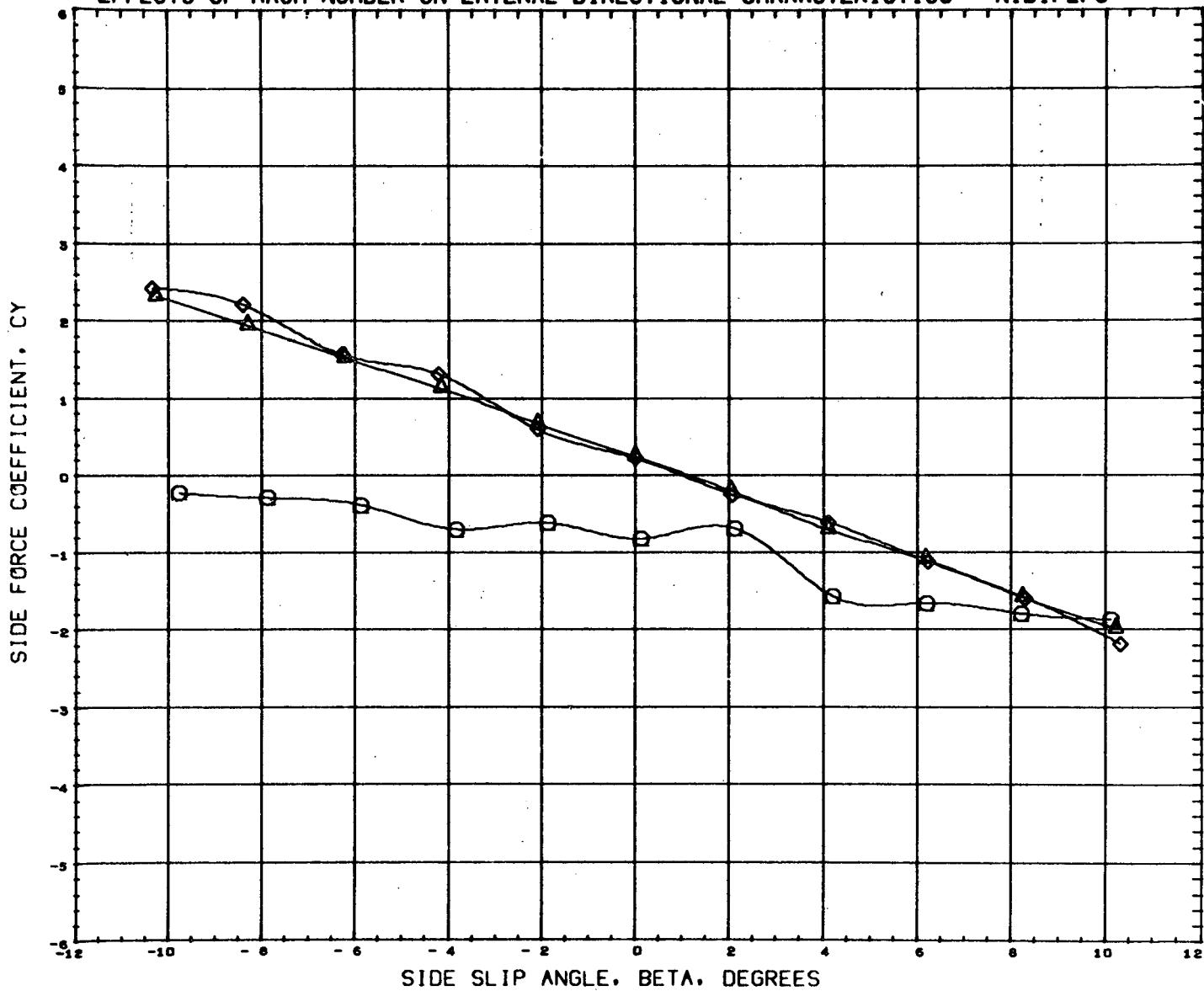
SYMBOL	MACH	PARAMETRIC VALUES
	0.602	ALPHA 30.000 DIMDR 30.000
	0.900	
	1.198	

REFERENCE INFORMATION		
BREF	0.9330	SQ. IN.
LREF	7.2230	IN.
BREF	7.2230	IN.
XMRP	4.3340	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

DATA HIST. CODE 8

MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F2F3 (S54025) 22 DEC 71 PAGE 98

EFFECTS OF MACH NUMBER ON LATERAL-DIRECTIONAL CHARACTERISTICS - N1B1F2F3



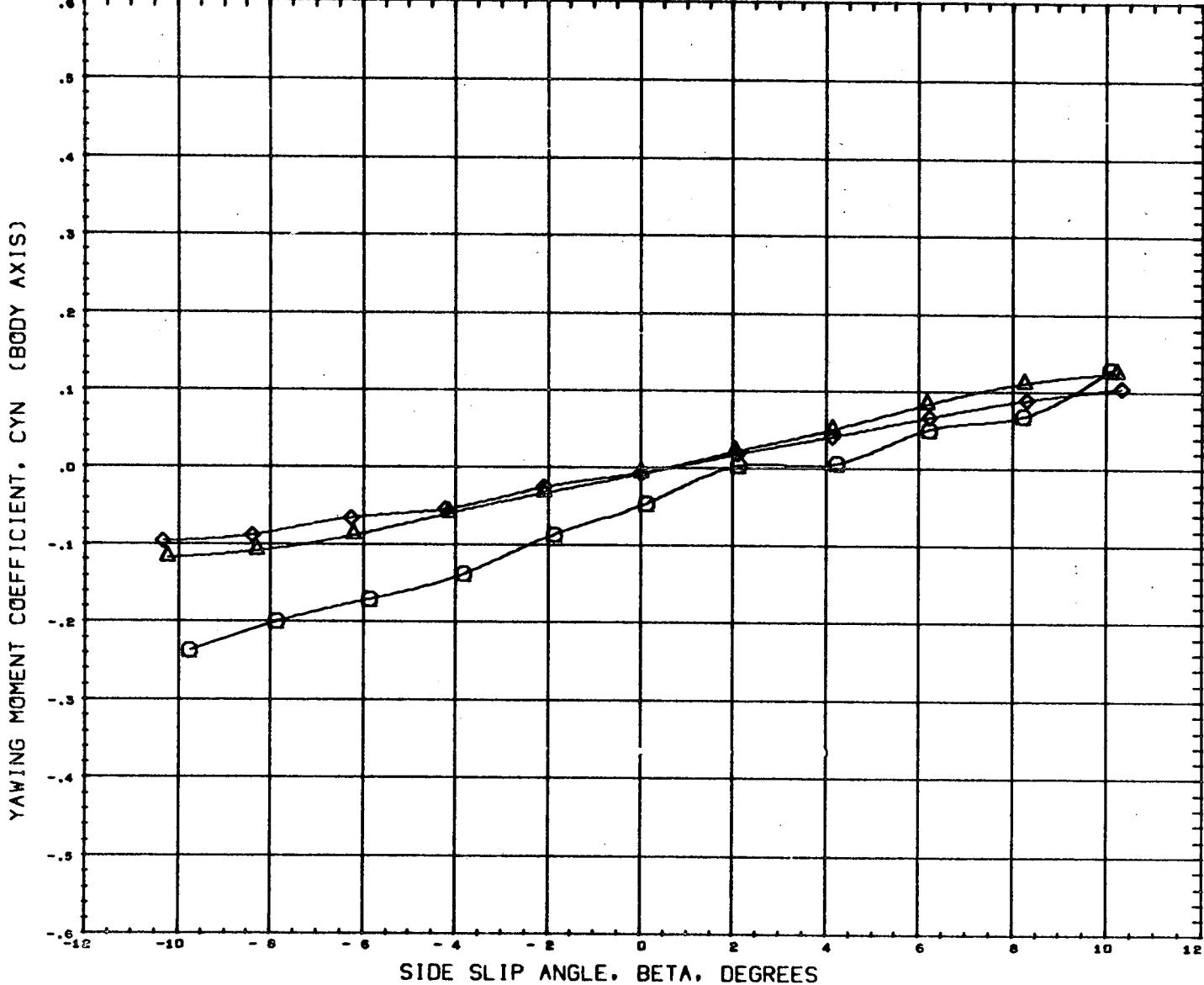
SYMBOL	MACH	PARAMETRIC VALUES		
	0.600	ALPHA	50.000	DIMDRL
	0.901			
	1.200			

REFERENCE INFORMATION		
SREF	0.9330	SB. IN.
LREF	7.2230	IN.
BREF	7.2230	IN.
XMRP	4.3340	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

DATA HIST. CODE S

MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F2F3 (S54026) 22 DEC 71 PAGE 99

EFFECTS OF MACH NUMBER ON LATERAL-DIRECTIONAL CHARACTERISTICS - N1B1F2F3



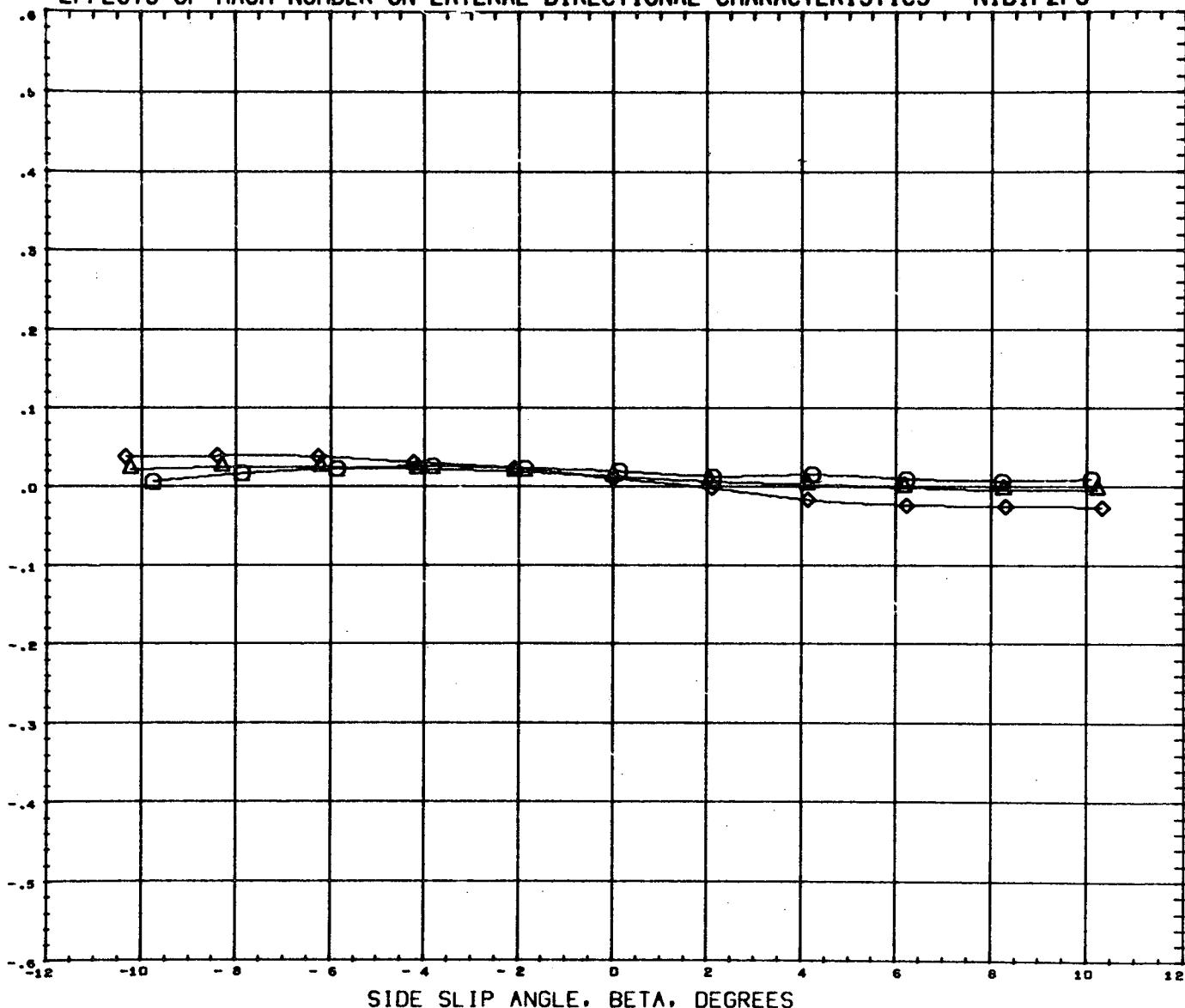
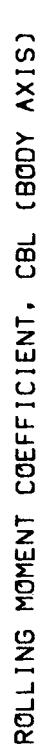
SYMBOL MACH PARAMETRIC VALUES
 0.600 ALPHA 50.000 DIHDL 30.000
 0.901
 1.200

REFERENCE INFORMATION
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 LREF 7.2230 IN.
 BREF 7.2230 IN.
 XMRP 4.3540 IN.
 YMNP 0.0000 IN.
 ZMRP 0.0000 IN.
 SCALE 0.0034

DATA HIST. CODE 5

MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F2F3 (S54026) 22 DEC 71 PAGE 100

EFFECTS OF MACH NUMBER ON LATERAL-DIRECTIONAL CHARACTERISTICS - N1B1F2F3



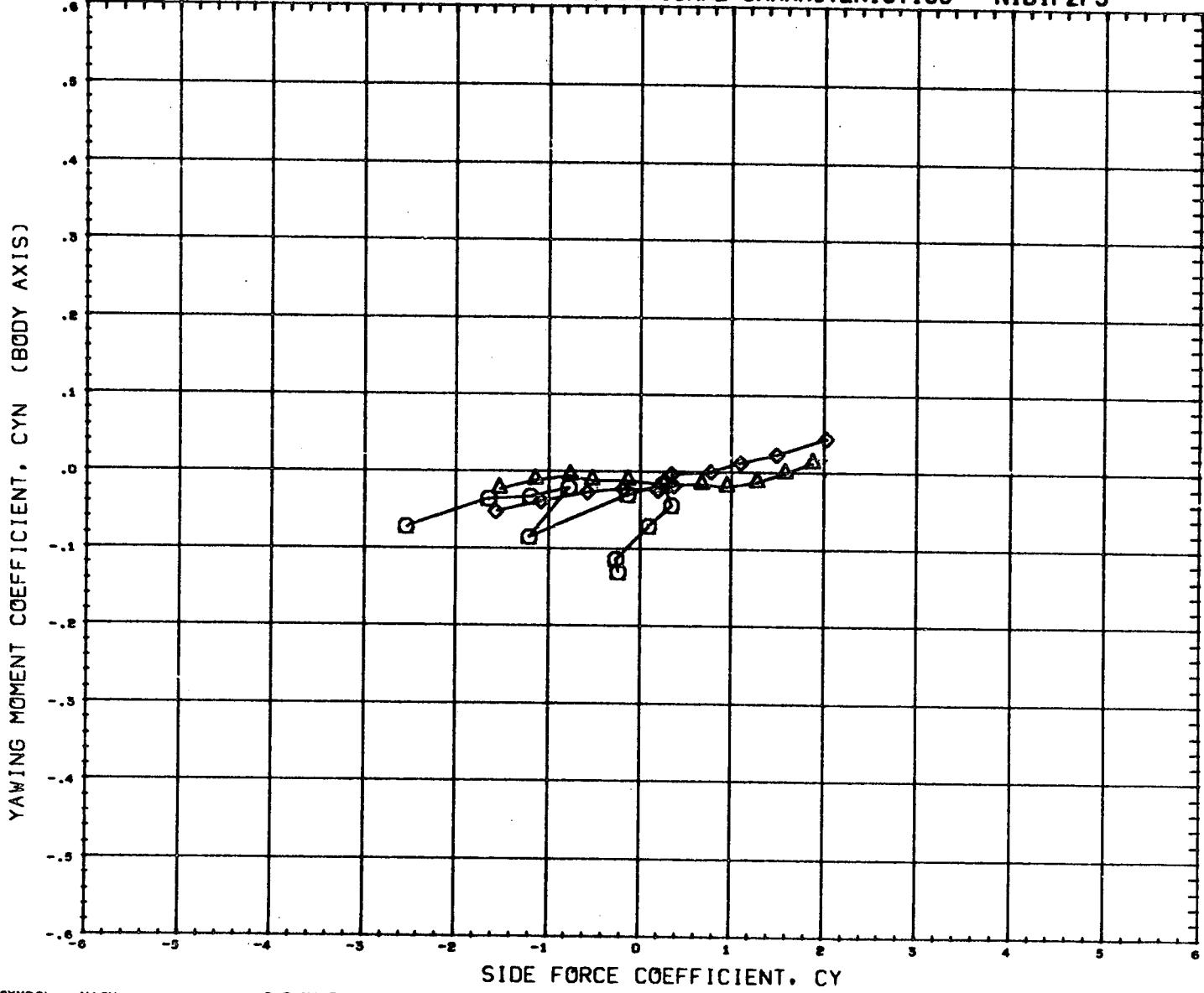
SYMBOL	MACH	PARAMETRIC VALUES		
	0.600	ALPHA	50.000	DIHTRL
	0.901			
	1.200			

REFERENCE INFORMATION		
SREF	0.9330	SQ.IN.
LREF	7.2230	IN.
BREF	7.2230	IN.
XMRP	4.3340	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

DATA HIST. CODE S

MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F2F3 (S54026) 22 DEC 71 PAGE 101

EFFECTS OF MACH NUMBER ON LATERAL-DIRECTIONAL CHARACTERISTICS - N1B1F2F3



SYMBOL MACH PARAMETRIC VALUES
 ◻ 0.603 ALPHA 30.000 DIHDLR 30.000

REFERENCE INFORMATION
 SREF 0.9350 SQ. IN.
 LREF 7.2230 IN.
 BREF 7.2230 IN.
 XMRP 4.3340 IN.
 YMRP 0.0000 IN.
 ZMRP 0.0000 IN.
 SCALE 0.0034

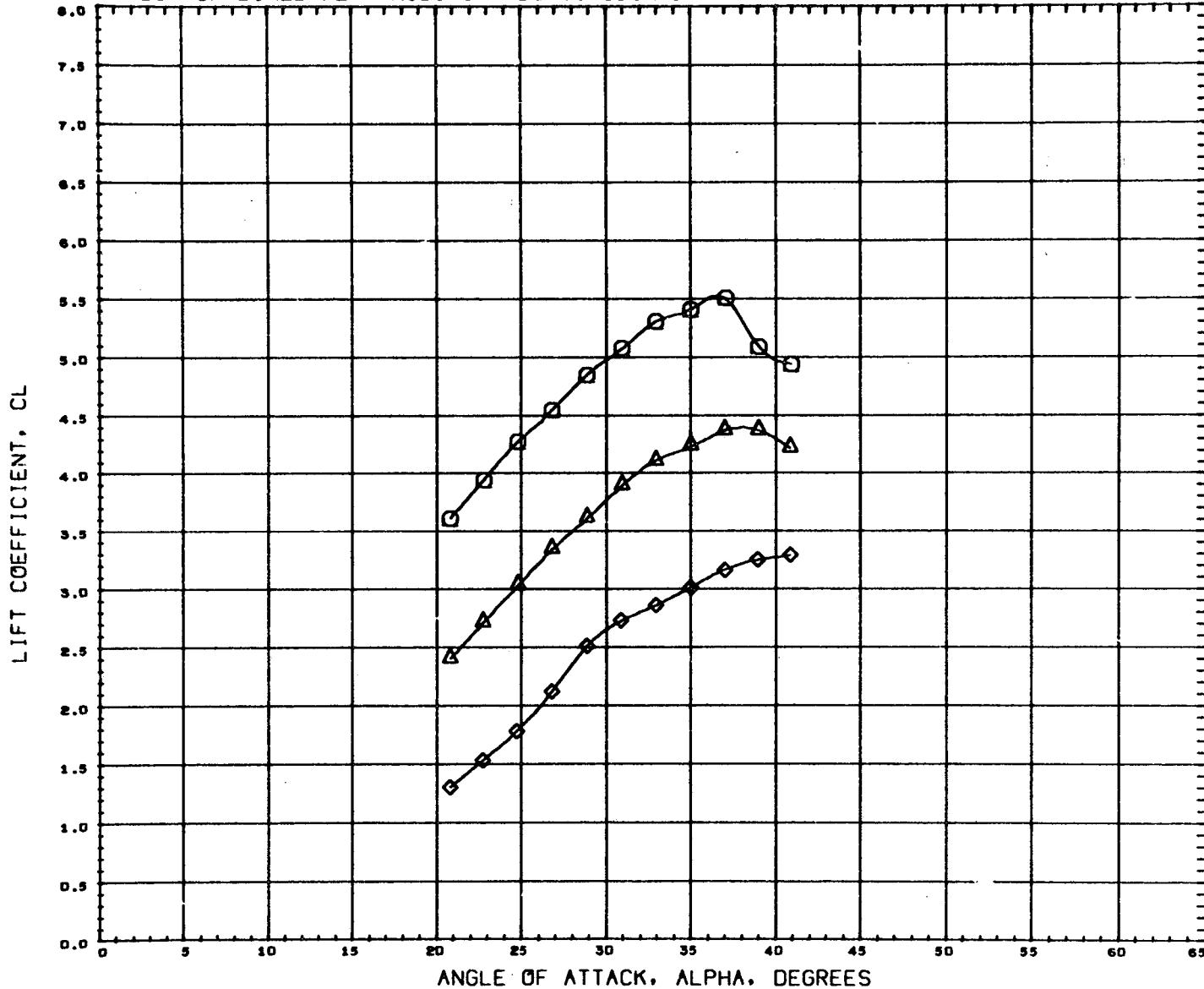
DATA MSTR. CODE 8

MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F2

(S54006) 22 DEC 71

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EFFECT OF DIHEDRAL - N1B1F6 - LONGITUDINAL CHARACTERISTICS



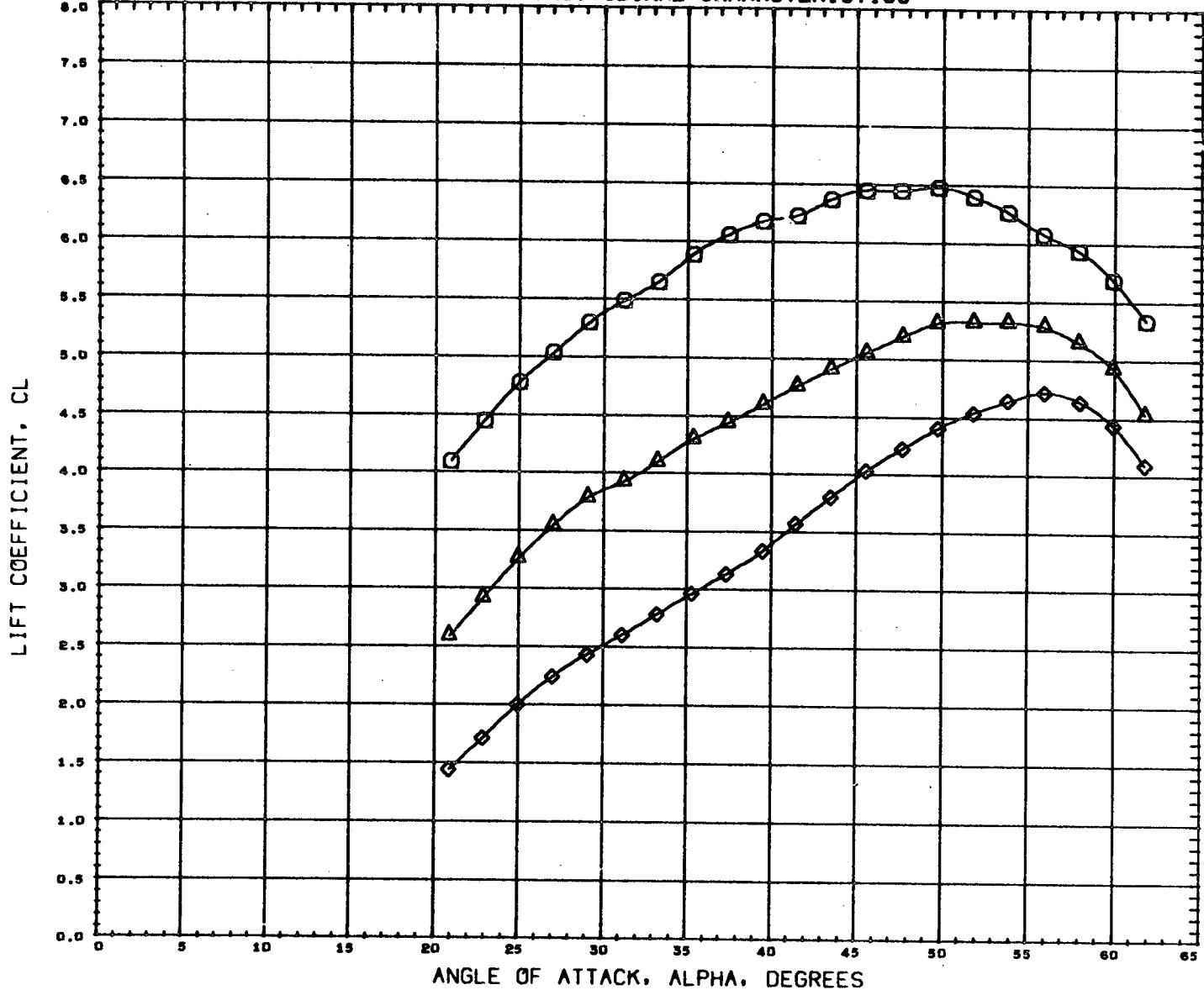
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 (154914) Q MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6
 (154907) A MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6
 (054921) D MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6

BETA DIHDL
 0.000 0.000
 0.000 30.000
 0.000 45.000

REFERENCE INFORMATION
 SREF 0.9330 SQ. IN.
 LREF 7.2230 IN.
 BREF 7.2230 IN.
 XMMP 4.3340 IN.
 YMMP 0.0000 IN.
 ZMMP 0.0000 IN.
 SCALE 0.0034

MACH 0.599

EFFECT OF DIHEDRAL - N1B1F6 - LONGITUDINAL CHARACTERISTICS



DATA SET SYMBOL CONFIGURATION DESCRIPTION

(154914)		MSFC 518	MSFC PRESSURE FED BOOSTER	N1B1F6
(154907)		MSFC 518	MSFC PRESSURE FED BOOSTER	N1B1F6
(054921)		MSFC 518	MSFC PRESSURE FED BOOSTER	N1B1F6

BETA DIHDRL

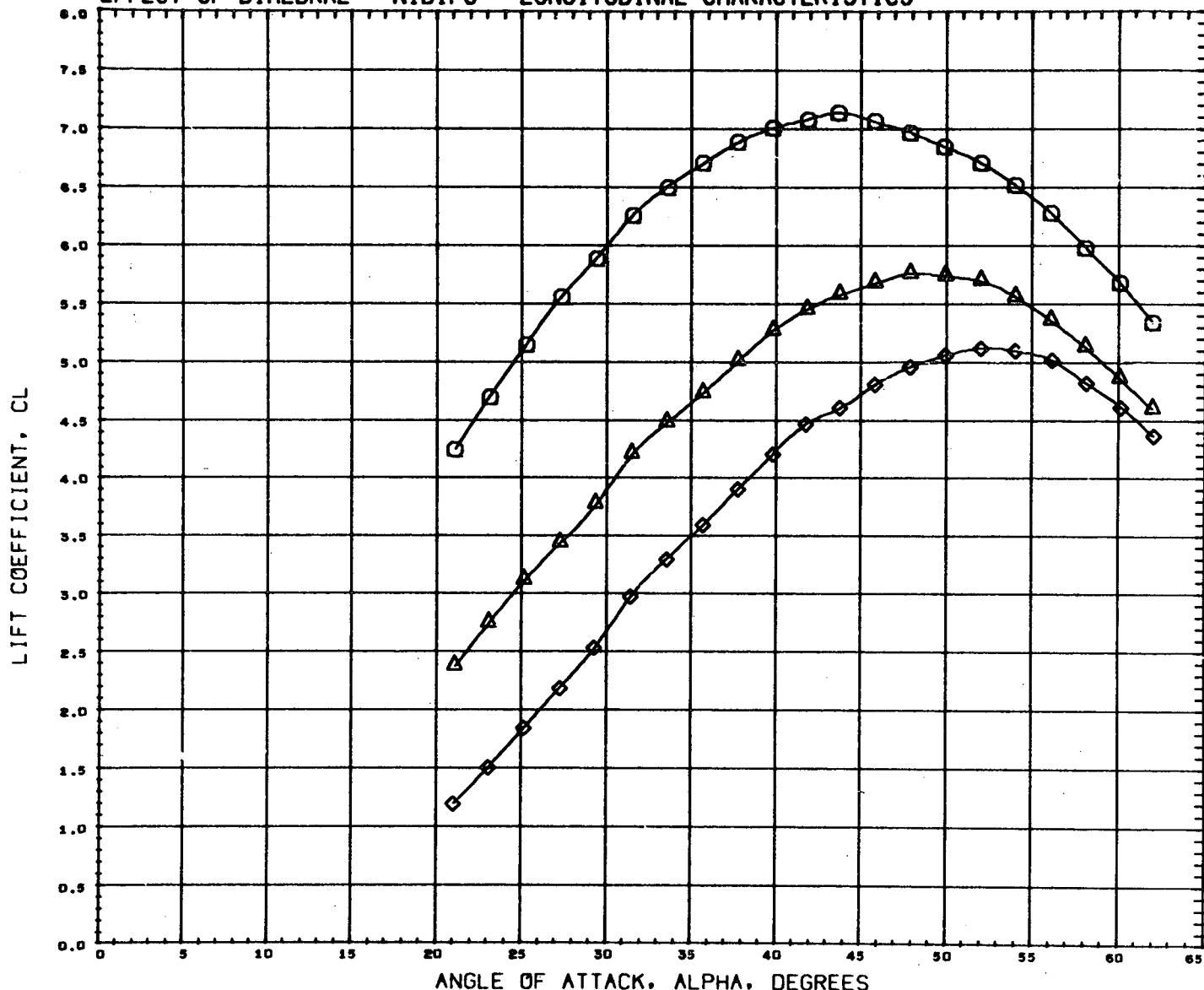
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REFERENCE INFORMATION

SREF	0.9330	SQ. IN.
LREF	7.2230	IN.
BREF	7.2230	IN.
XMRP	4.3340	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

MACH 0.699

EFFECT OF DIHEDRAL - N1B1F6 - LONGITUDINAL CHARACTERISTICS



DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (154914) Q MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6
 (154907) A MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6
 (054921) D MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6

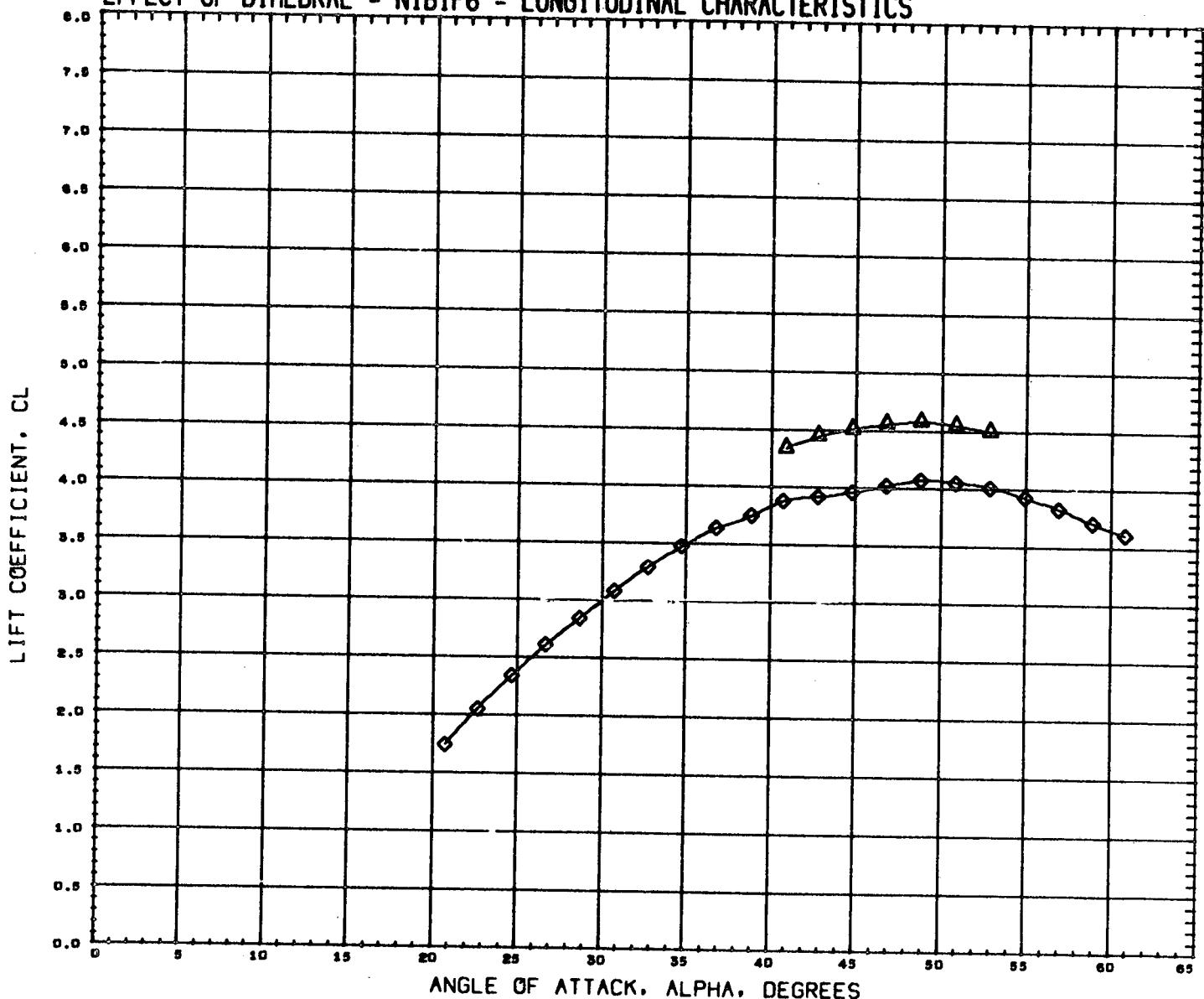
BETA DIHEDRL
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 0.000 30.000
 0.000 45.000

REFERENCE INFORMATION
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 LREF 7.2230 IN.
 BREF 7.2230 IN.
 XMRP 4.3340 IN.
 YMRP 0.0000 IN.
 ZMRP 0.0000 IN.
 SCALE 0.0034

MACH 1.198

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EFFECT OF DIHEDRAL - N1B1F6 - LONGITUDINAL CHARACTERISTICS



DATA SET SYMBOL CONFIGURATION DESCRIPTION

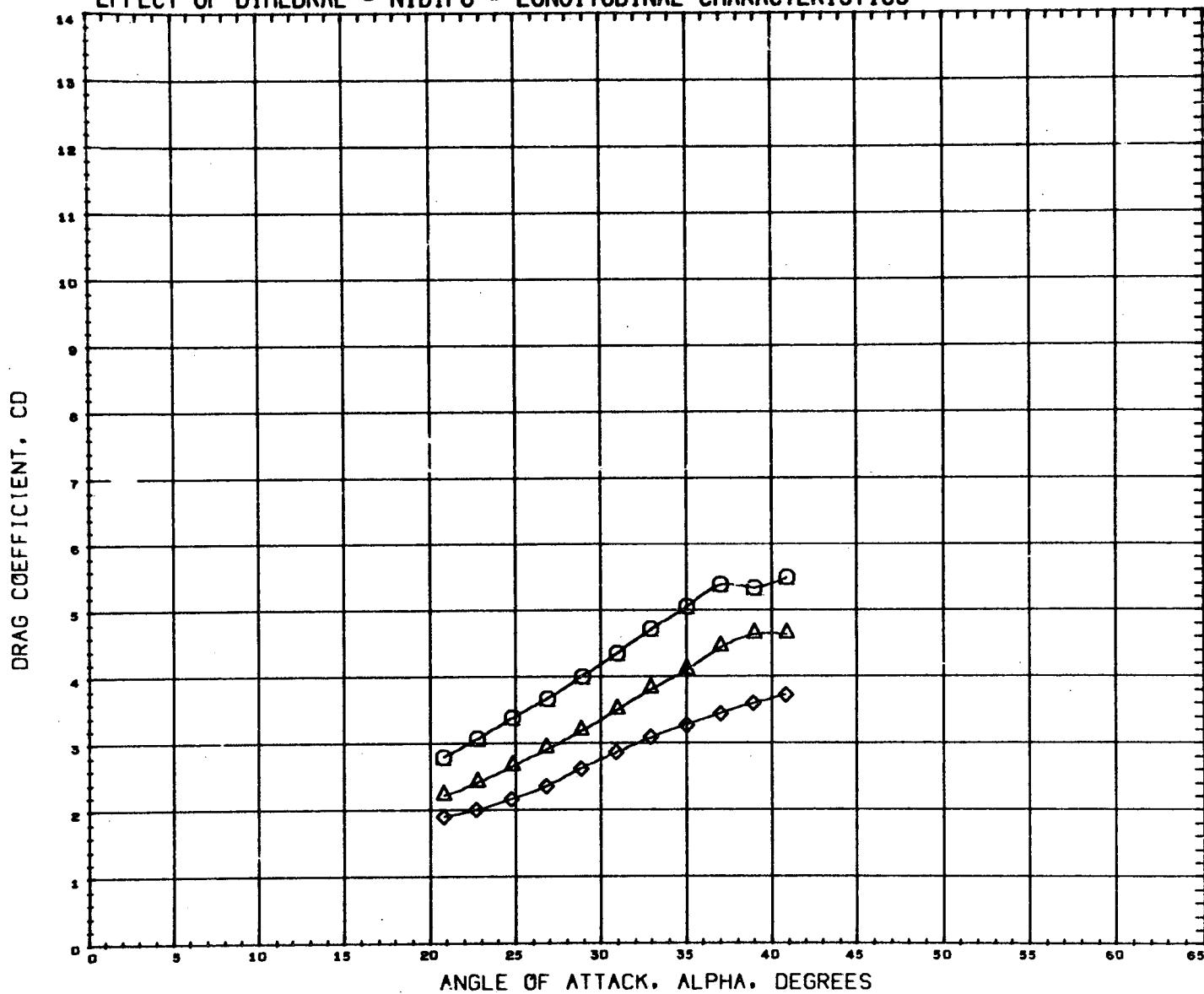
(154914) DATA NOT AVAILABLE FOR ALL CONDITIONS
 (154907) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6
 (054921) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6

BETA DIHDL
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 0.000 30.000
 0.000 45.000

REFERENCE INFORMATION
 SREF 0.9330 SG. IN.
 LREF 7.2230 IN.
 BREF 7.2230 IN.
 XMRP 4.3340 IN.
 YMRP 0.0000 IN.
 ZMRP 0.0000 IN.
 SCALE 0.0034

MACH 4.960

EFFECT OF DIHEDRAL - N1B1F6 - LONGITUDINAL CHARACTERISTICS



DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (154914) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6
 (154907) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6
 (054921) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6

BETA DIHDRL

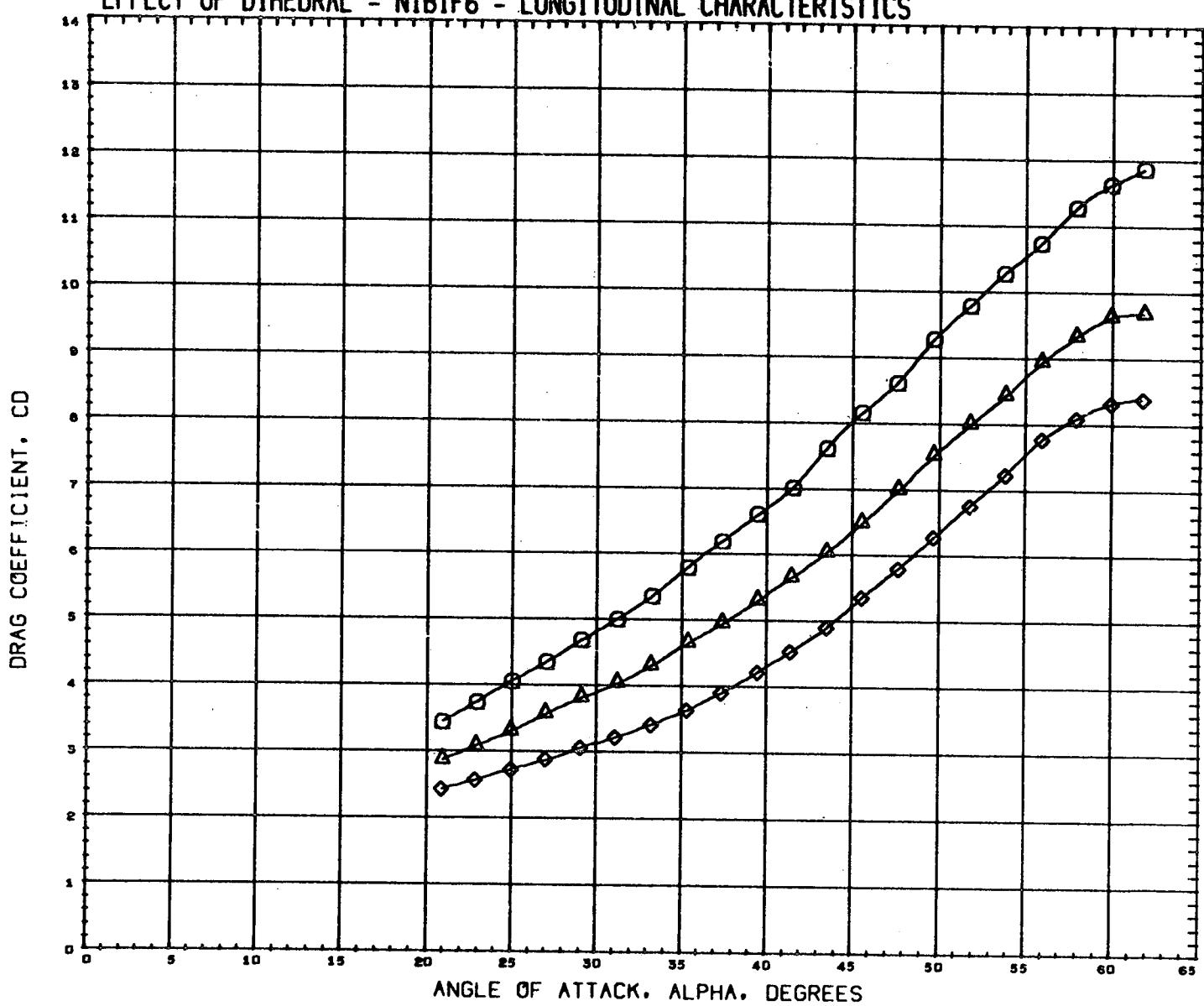
0.000 0.000
0.000 30.000
0.000 45.000

REFERENCE INFORMATION
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 LREF 7.2230 IN.
 BREF 7.2230 IN.
 XMRP 4.3340 IN.
 YMRP 0.0000 IN.
 ZMRP 0.0000 IN.
 SCALE 0.0034

MACH 0.599

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EFFECT OF DIHEDRAL - N1B1F6 - LONGITUDINAL CHARACTERISTICS



DATA SET SYMBOL CONFIGURATION DESCRIPTION

(154914) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6
 (154907) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6
 (054921) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6

BETA DIHDL

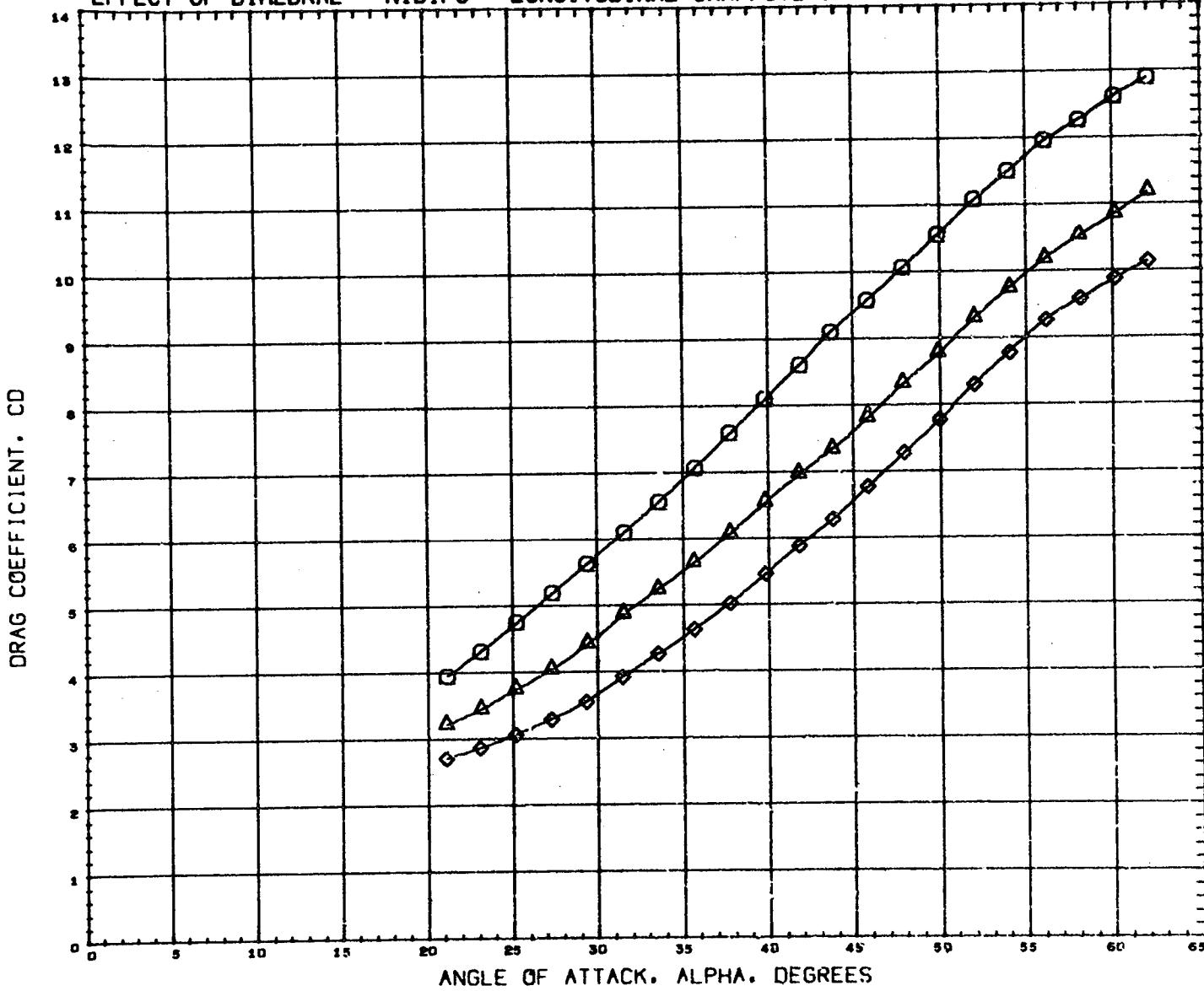
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REFERENCE INFORMATION

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 LREF 7.2230 IN.
 BREF 7.2230 IN.
 XMRP 4.3340 IN.
 YMRP 0.0000 IN.
 ZMRP 0.0000 IN.
 SCALE 0.0034

MACH 0.699

EFFECT OF DIHEDRAL - N1B1F6 - LONGITUDINAL CHARACTERISTICS



DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (154914) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6
 (154907) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6
 (054921) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6

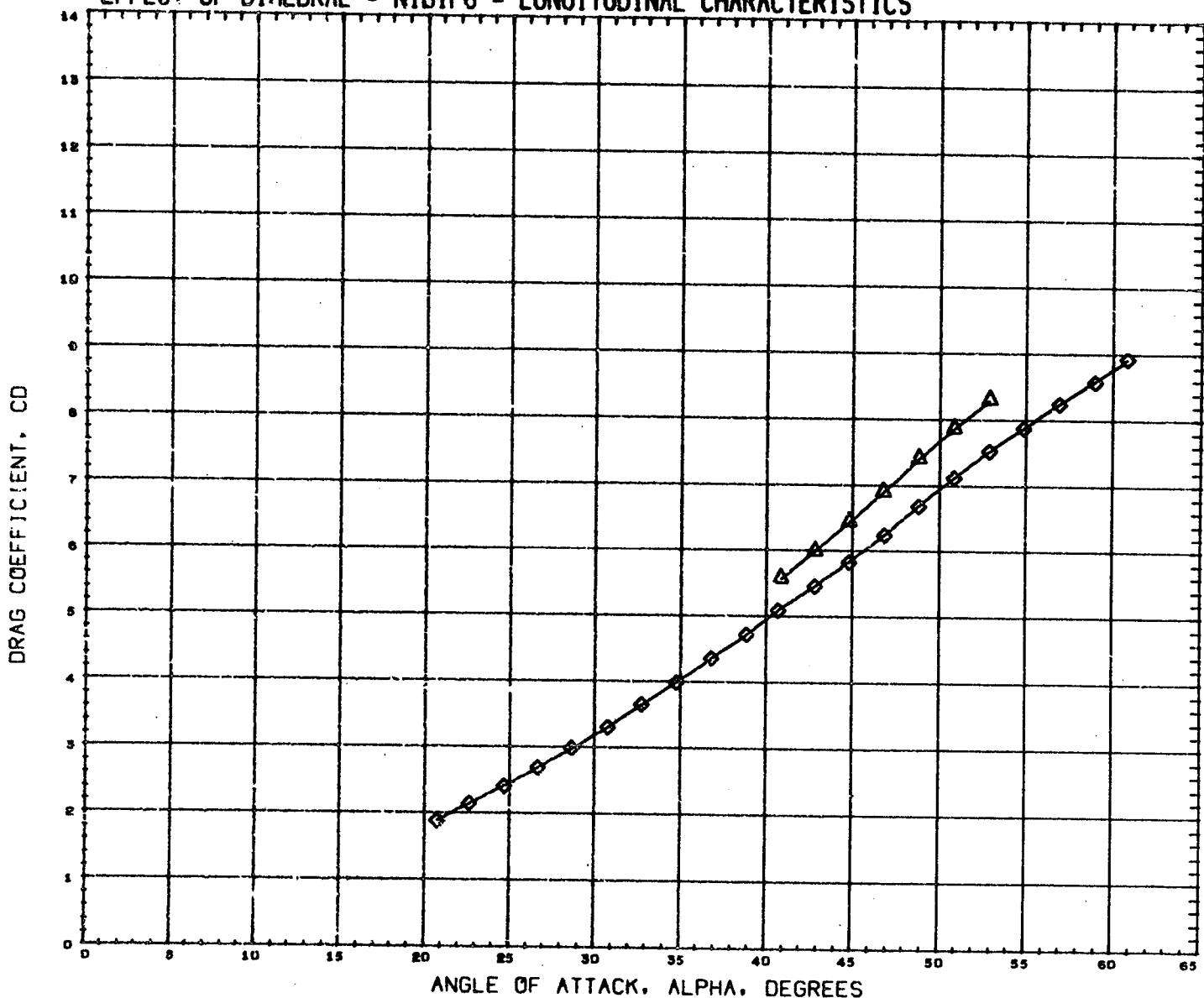
BETA DIHEDR
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 0.000 45.000

REFERENCE INFORMATION
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 BREF 7.2230 IN.
 XMNP 4.3340 IN.
 YMNP 0.0000 IN.
 ZMNP 0.0000 IN.
 SCALE 0.0034

MACH 1.198

PAGE 109

EFFECT OF DIHEDRAL - N1B1F6 - LONGITUDINAL CHARACTERISTICS



DATA SET SYMBOL CONFIGURATION DESCRIPTION

(154914) DATA NOT AVAILABLE FOR ALL CONDITIONS
 (154907) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6
 (054921) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6

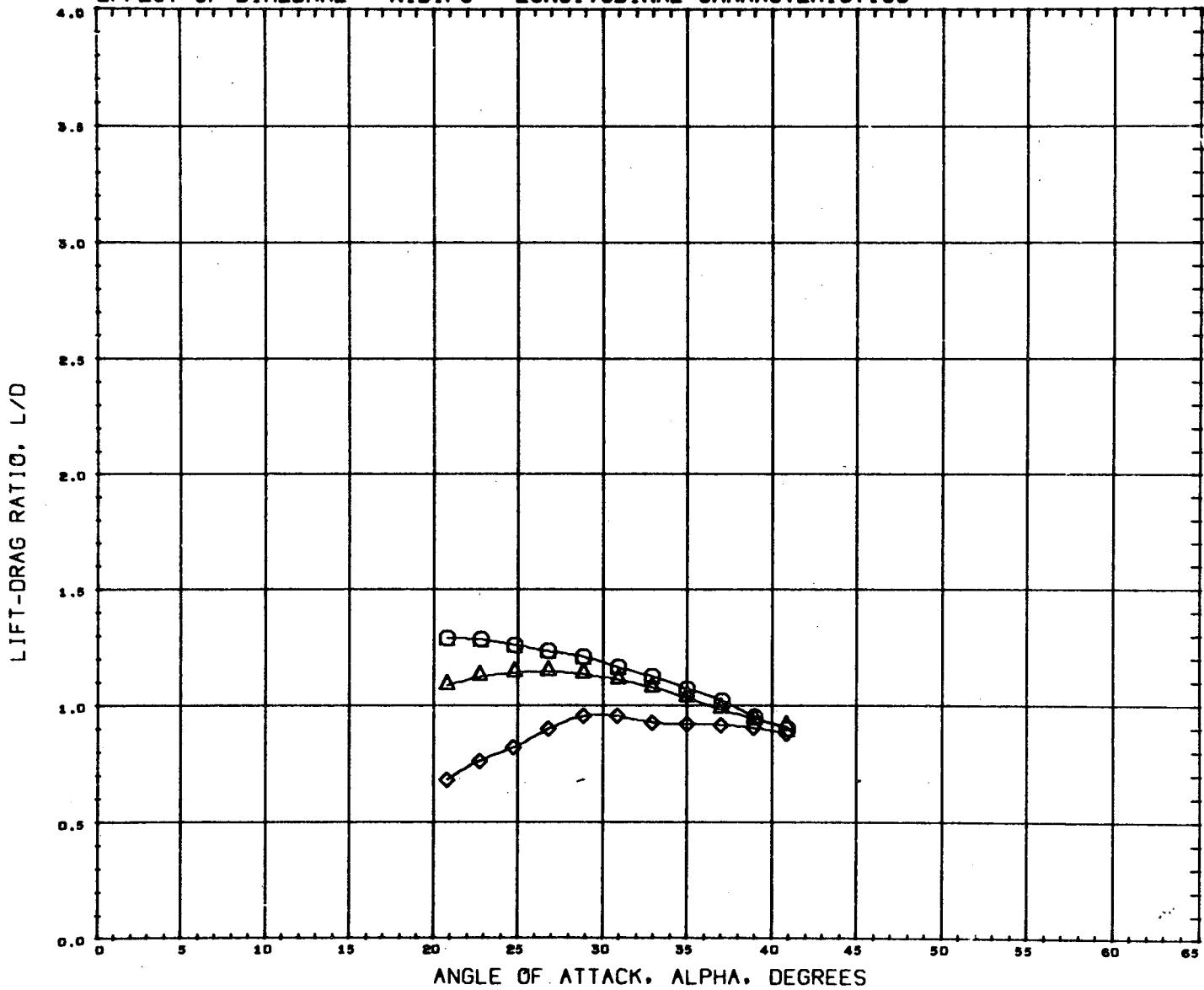
BETA DIHDRL
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 0.000 45.000

REFERENCE INFORMATION
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 LREF 7.2230 IN.
 BREF 7.2230 IN.
 XMRP 4.3340 IN.
 YMRP 0.0000 IN.
 ZMRP 0.0000 IN.
 SCALE 0.0034

MACH 4.960

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EFFECT OF DIHEDRAL - N1B1F6 - LONGITUDINAL CHARACTERISTICS



DATA SET SYMBOL CONFIGURATION DESCRIPTION

(154914) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6
 (154907) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6
 (054921) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6

BETA DIHDRL

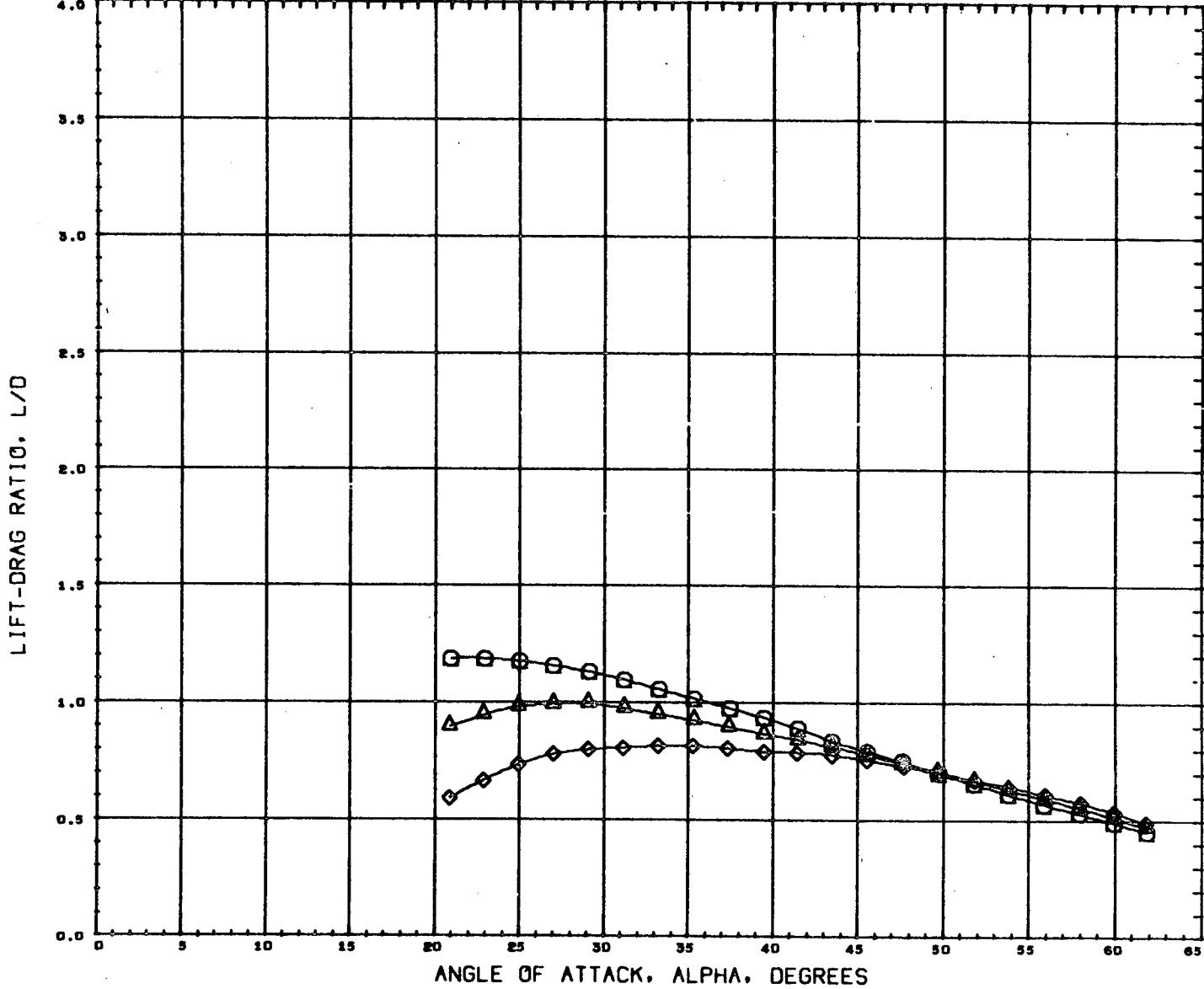
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 0.000 45.000

REFERENCE INFORMATION

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 LREF 7.2230 IN.
 BREF 7.2230 IN.
 XMRP 4.3340 IN.
 YMRP 0.0000 IN.
 ZMRP 0.0000 IN.
 SCALE 0.0034

MACH 0.599

EFFECT OF DIHEDRAL - N1B1F6 - LONGITUDINAL CHARACTERISTICS



DATA SET SYMBOL CONFIGURATION DESCRIPTION

(154914) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6
 (154907) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6
 (054921) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6

BETA DIHDL

0.000 0.000
 0.000 30.000
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REFERENCE INFORMATION

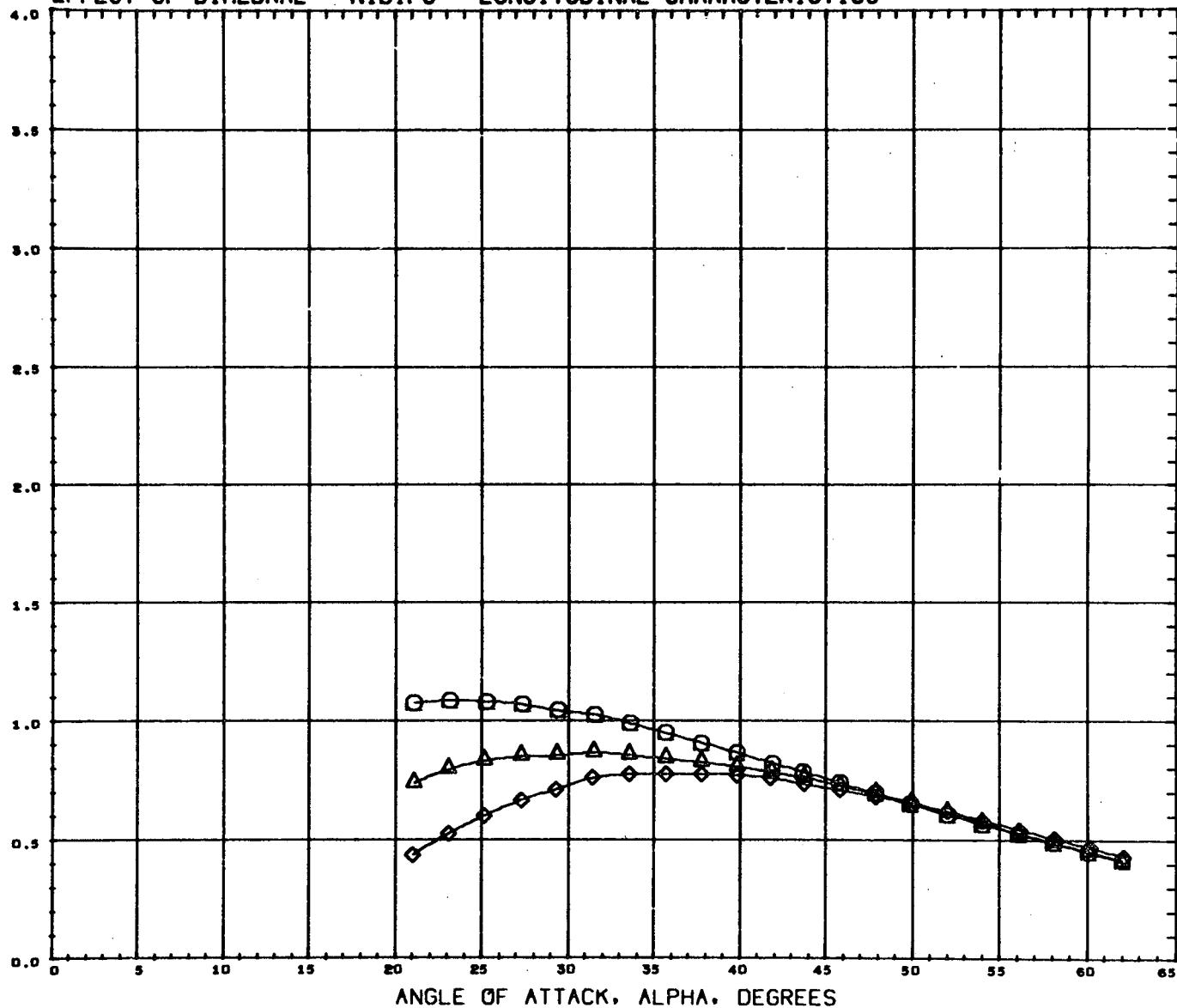
SREF 0.9330 88. IN.
 LREF 7.2230 IN.
 BREF 7.2230 IN.
 XMMP 4.3340 IN.
 YMMP 0.0000 IN.
 ZMMP 0.0000 IN.
 SCALE 0.0034

MACH 0.699

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EFFECT OF DIHEDRAL - N1B1F6 - LONGITUDINAL CHARACTERISTICS

LIFT-DRAG RATIO, L/D



DATA SET SYMBOL CONFIGURATION DESCRIPTION

(154914) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6
 (154907) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6
 (054921) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6

BETA DIHDRL

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 0.000 30.000
 0.000 45.000

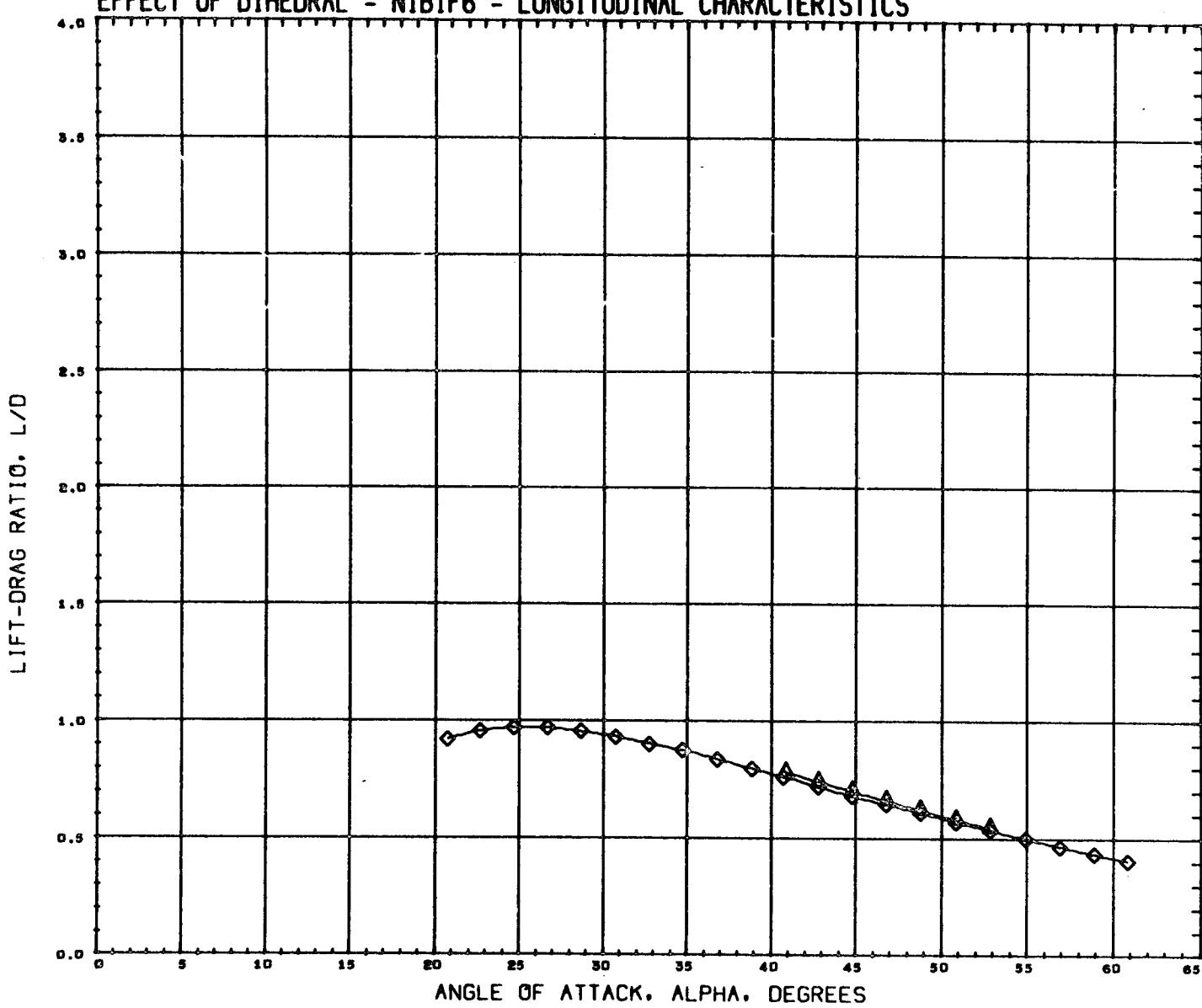
REFERENCE INFORMATION

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 BREF 7.2230 IN.
 XMNP 4.3340 IN.
 YMNP 0.0000 IN.
 ZMNP 0.0000 IN.
 SCALE 0.0054

MACH 1.198

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EFFECT OF DIHEDRAL - N1B1F6 - LONGITUDINAL CHARACTERISTICS



DATA SET SYMBOL CONFIGURATION DESCRIPTION

(154514) DATA NOT AVAILABLE FOR ALL CONDITIONS
 (154507) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6
 (054921) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6

BETA DIHDL

0.000 0.000
 0.000 30.000
 0.000 45.000

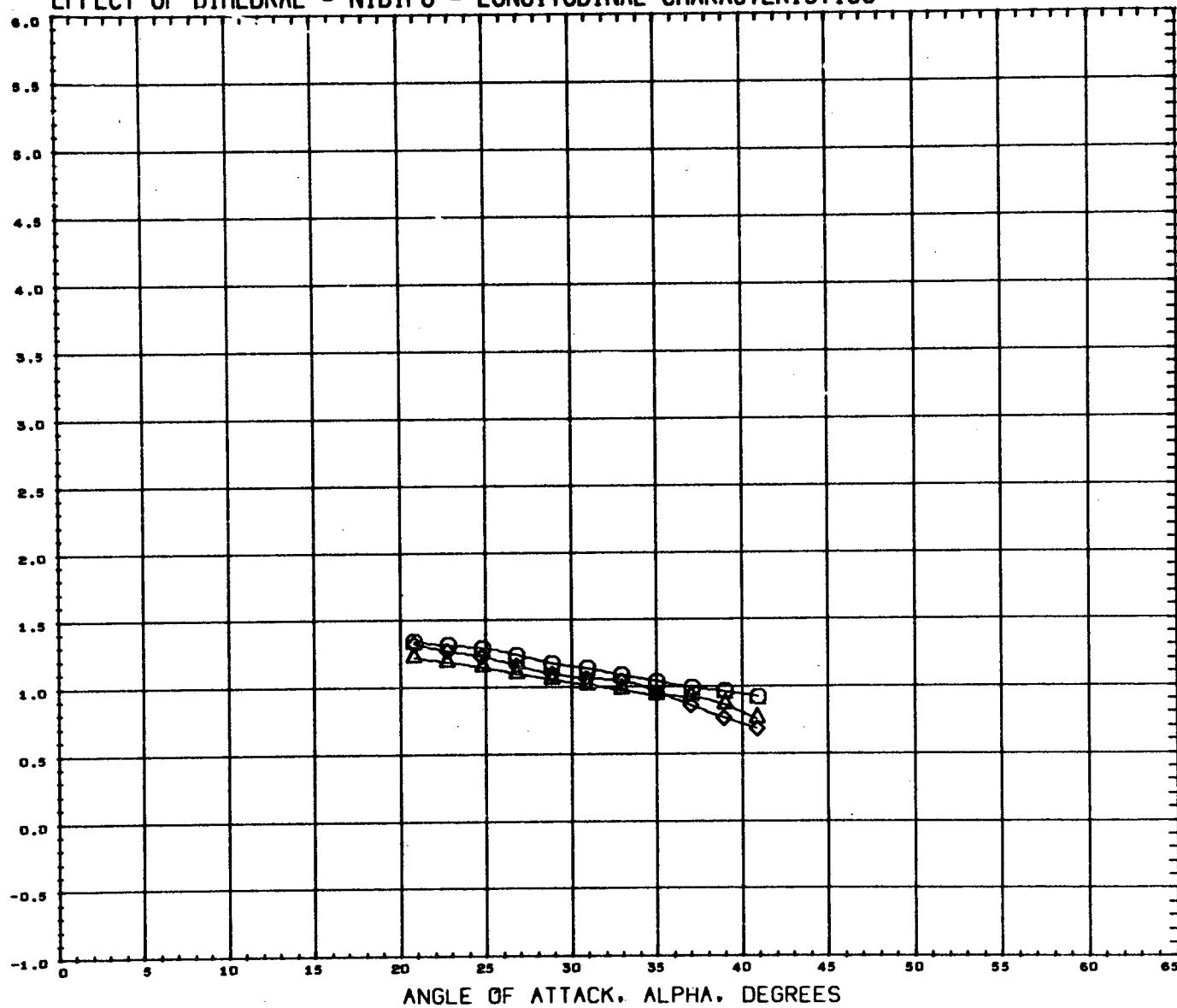
REFERENCE INFORMATION

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 LREF 7.2230 IN.
 BREF 7.2230 IN.
 XNRP 4.3340 IN.
 YMNP 0.0000 IN.
 ZMNP 0.0000 IN.
 SCALE 0.0034

MACH 4.960

EFFECT OF DIHEDRAL - N1B1F6 - LONGITUDINAL CHARACTERISTICS

AXIAL FORCE COEFFICIENT, CA



ANGLE OF ATTACK, ALPHA, DEGREES

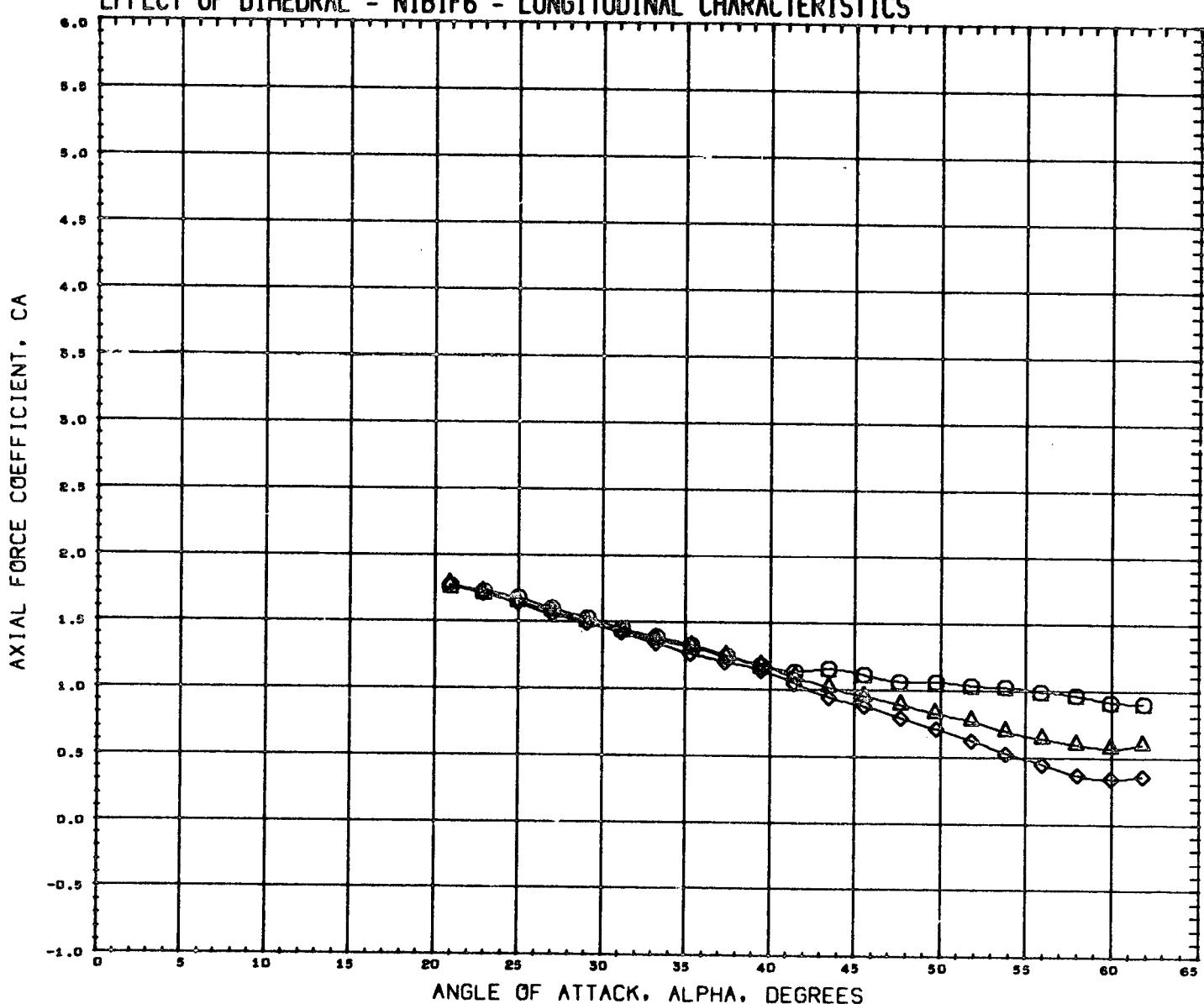
DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(154914)	MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6
(154907)	MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6
(054921)	MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6

BETA	DIHDL
0.000	0.000
0.000	30.000
0.000	45.000

REFERENCE INFORMATION
SREF 0.9350 SQ.IN.
LREF 7.2230 IN.
BREF 7.2230 IN.
XMRP 4.3340 IN.
YMRP 0.0000 IN.
ZMRP 0.0000 IN.
SCALE 0.0034

MACH 0.599

EFFECT OF DIHEDRAL - N1B1F6 - LONGITUDINAL CHARACTERISTICS



DATA SET SYMBOL CONFIGURATION DESCRIPTION

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 (154907) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6
 (034921) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6

BETA DIHDRL

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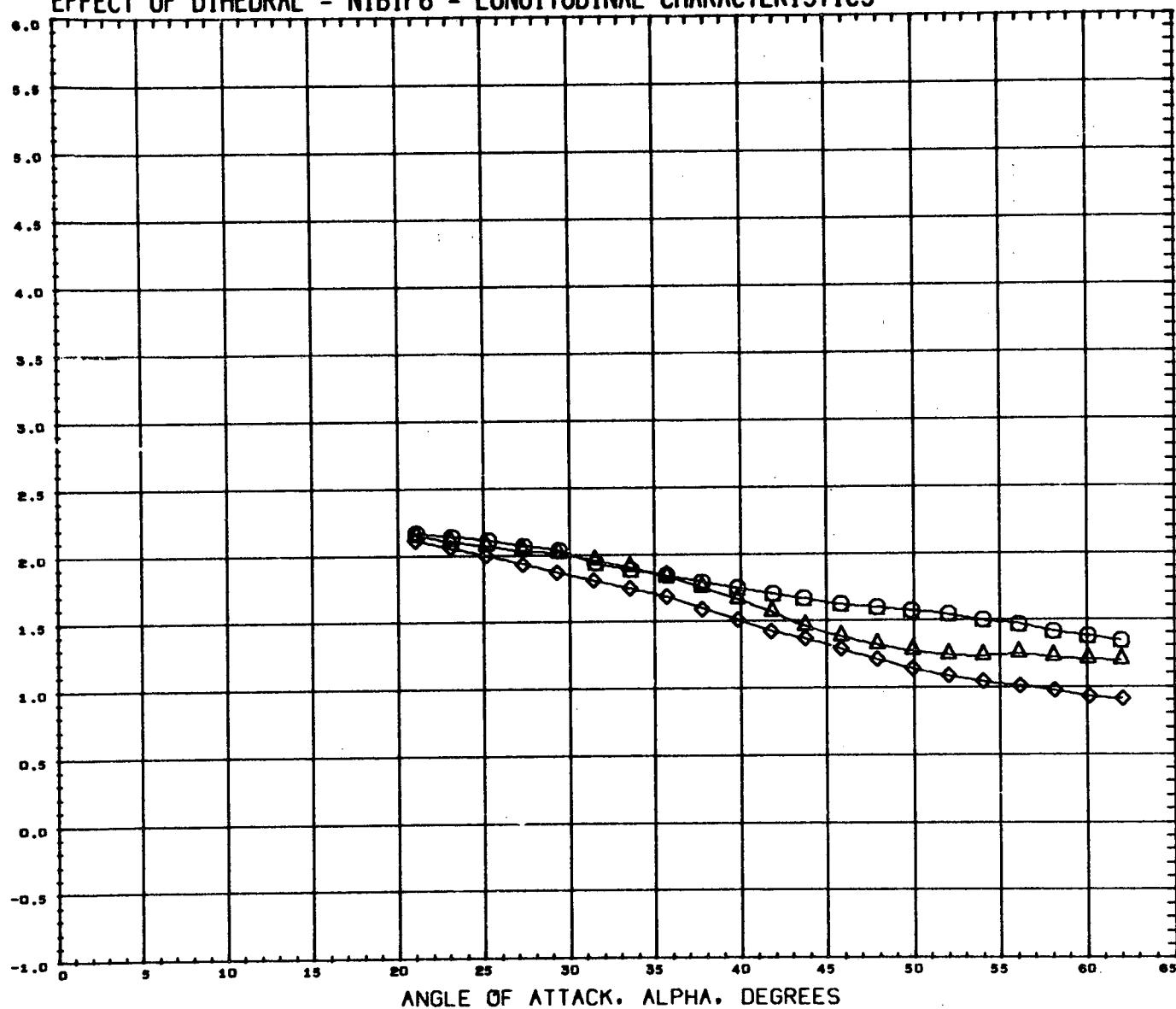
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 DREF 7.2230 IN.
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 YMRP 0.0000 IN.
 ZMRP 0.0000 IN.
 SCALE 0.0034

MACH 0.899

EFFECT OF DIHEDRAL - N1B1F6 - LONGITUDINAL CHARACTERISTICS

AXIAL FORCE COEFFICIENT, CA



ANGLE OF ATTACK, ALPHA, DEGREES

DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(154914)	MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6
(154907)	MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6
(054921)	MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6

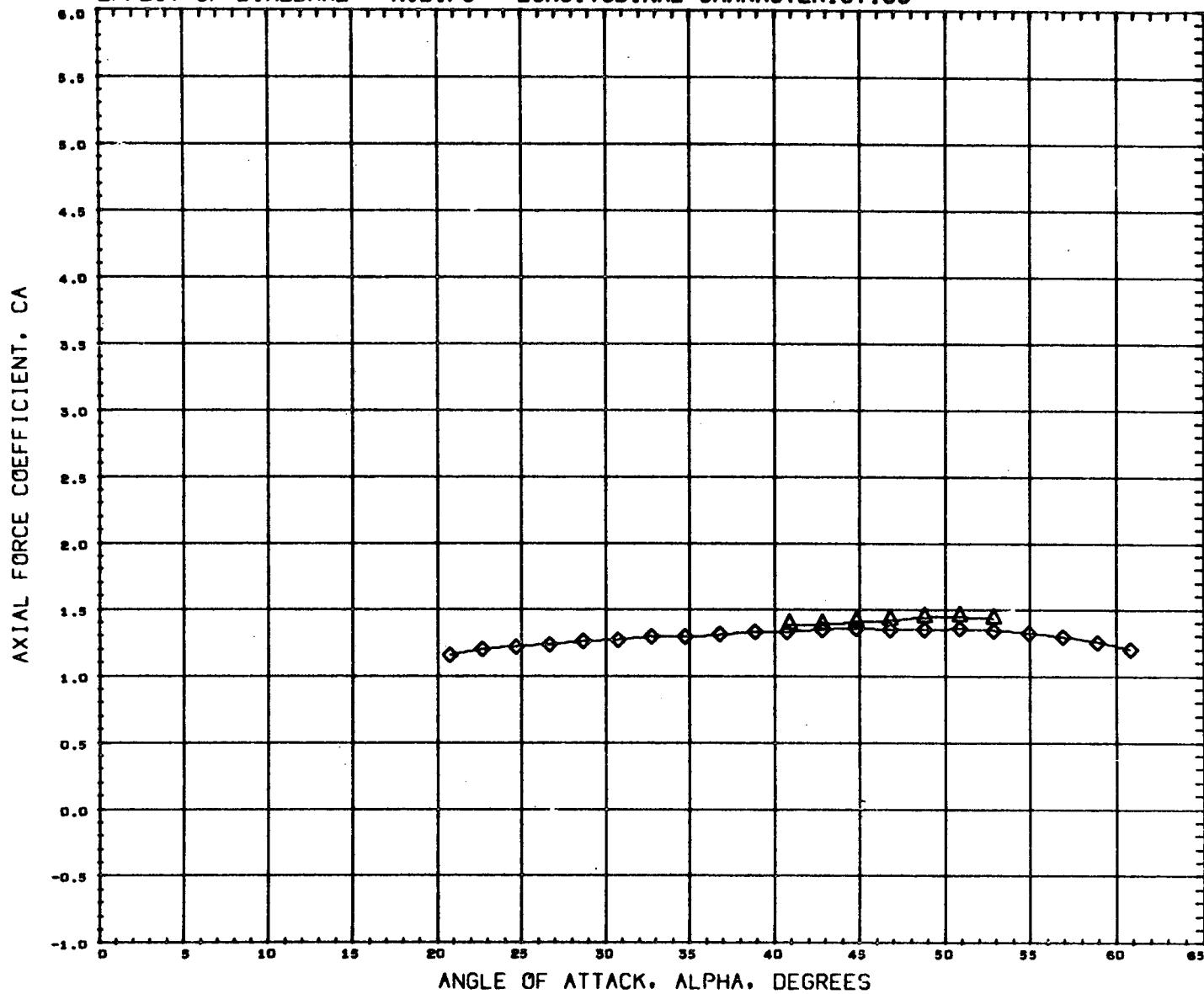
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0.000	45.000

REFERENCE INFORMATION
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BREF 7.2230 IN.
XMRP 4.3340 IN.
YMRP 0.0000 IN.
ZMRP 0.0000 IN.
SCALE 0.0034

MACH 1.198

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EFFECT OF DIHEDRAL - N1B1F6 - LONGITUDINAL CHARACTERISTICS



DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (154914) DATA NOT AVAILABLE FOR ALL CONDITIONS
 (154907) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6
 (054921) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6

BETA DIHDRL
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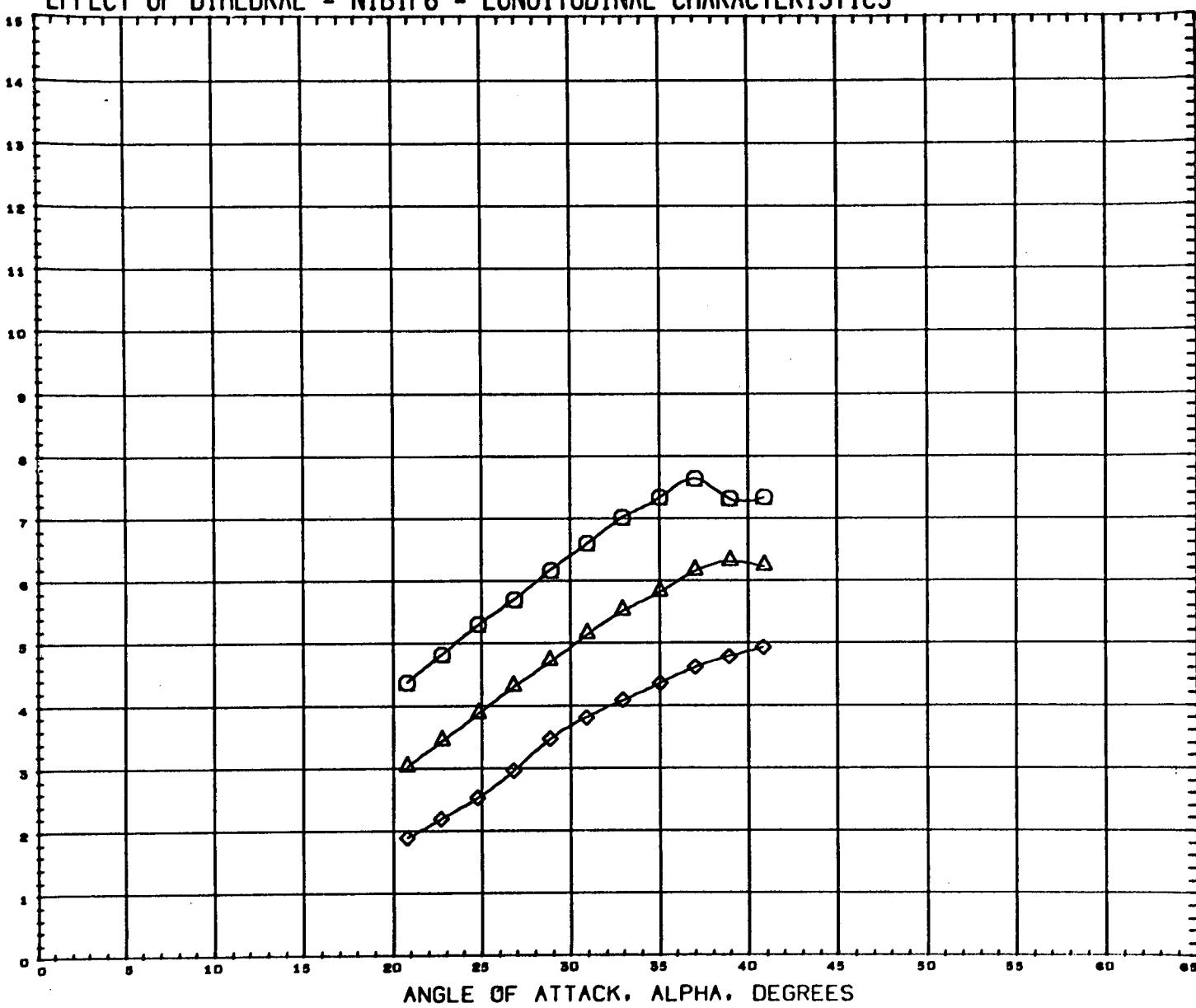
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 BREF 7.2230 IN.
 XMRP 4.3340 IN.
 YMRP 0.0000 IN.
 ZMRP 0.0000 IN.
 SCALE 0.0034

MACH 4.960

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EFFECT OF DIHEDRAL - N1B1F6 - LONGITUDINAL CHARACTERISTICS

NORMAL FORCE COEFFICIENT, CN



DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (154914) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6
 (154907) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6
 (054921) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6

BETA DIHDRL
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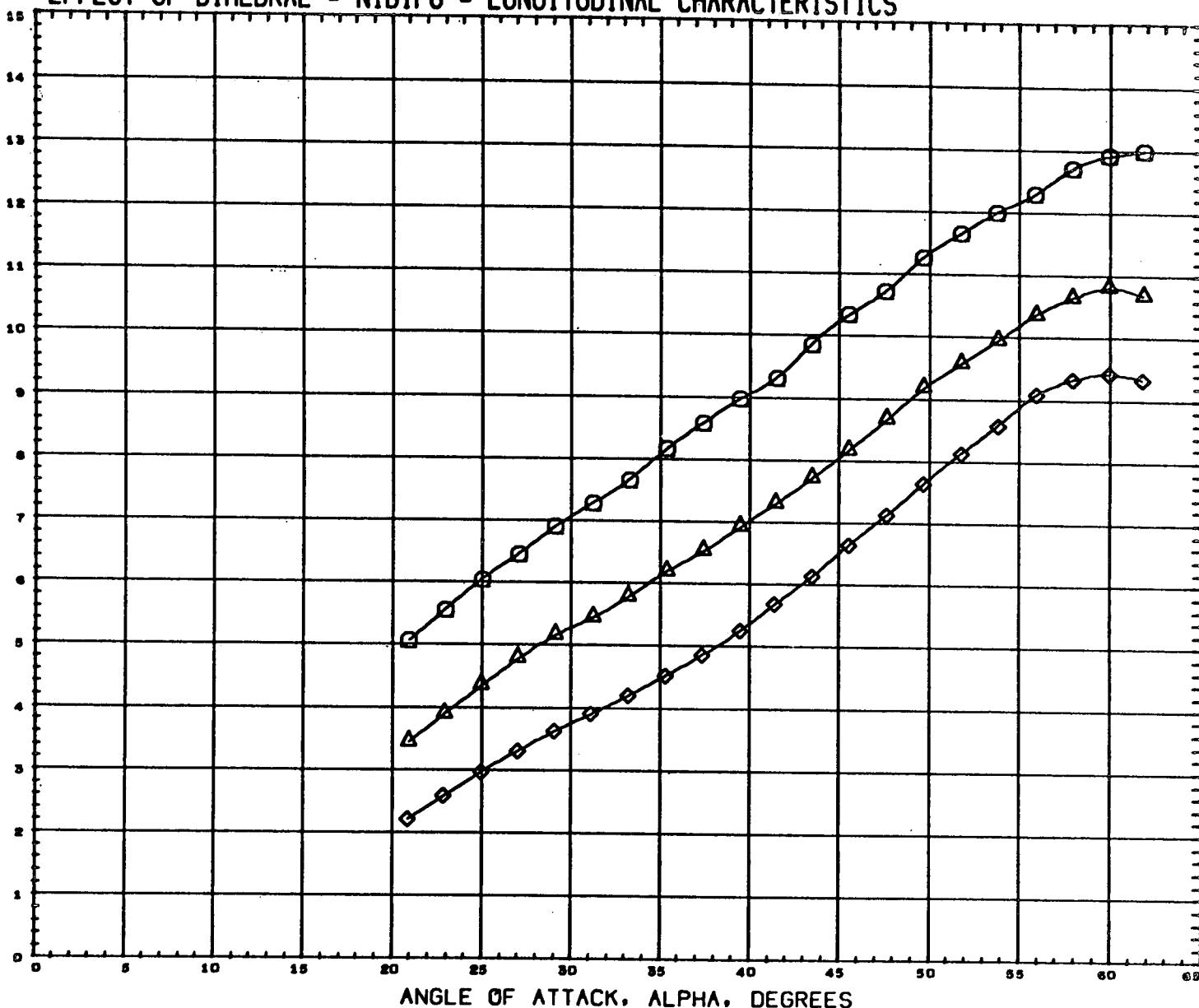
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 ZMRP 0.0000 IN.
 SCALE 0.0034

MACH 0.599

PAGE 119

EFFECT OF DIHEDRAL - N1B1F6 - LONGITUDINAL CHARACTERISTICS

NORMAL FORCE COEFFICIENT, CN



DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (154914) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6
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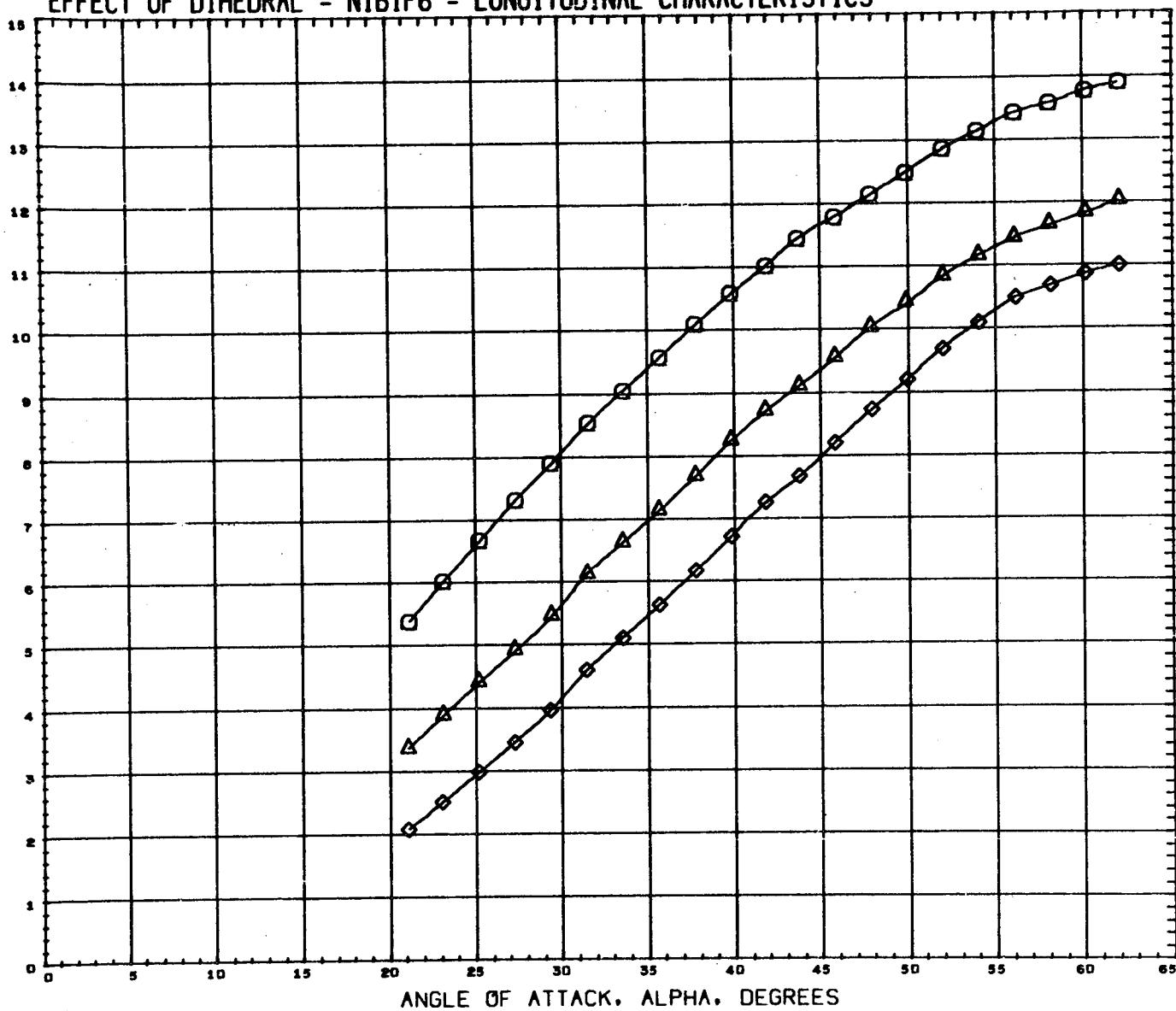
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 0.000 45.000

REFERENCE INFORMATION
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 BREF 7.2230 IN.
 XMRP 4.3340 IN.
 YMRP 0.0000 IN.
 ZMRP 0.0000 IN.
 SCALE 0.0034

MACH 0.699

EFFECT OF DIHEDRAL - N1B1F6 - LONGITUDINAL CHARACTERISTICS

NORMAL FORCE COEFFICIENT, CN



DATA SET SYMBOL CONFIGURATION DESCRIPTION
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 (154907) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6
 (054821) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6

BETA DIHDRL
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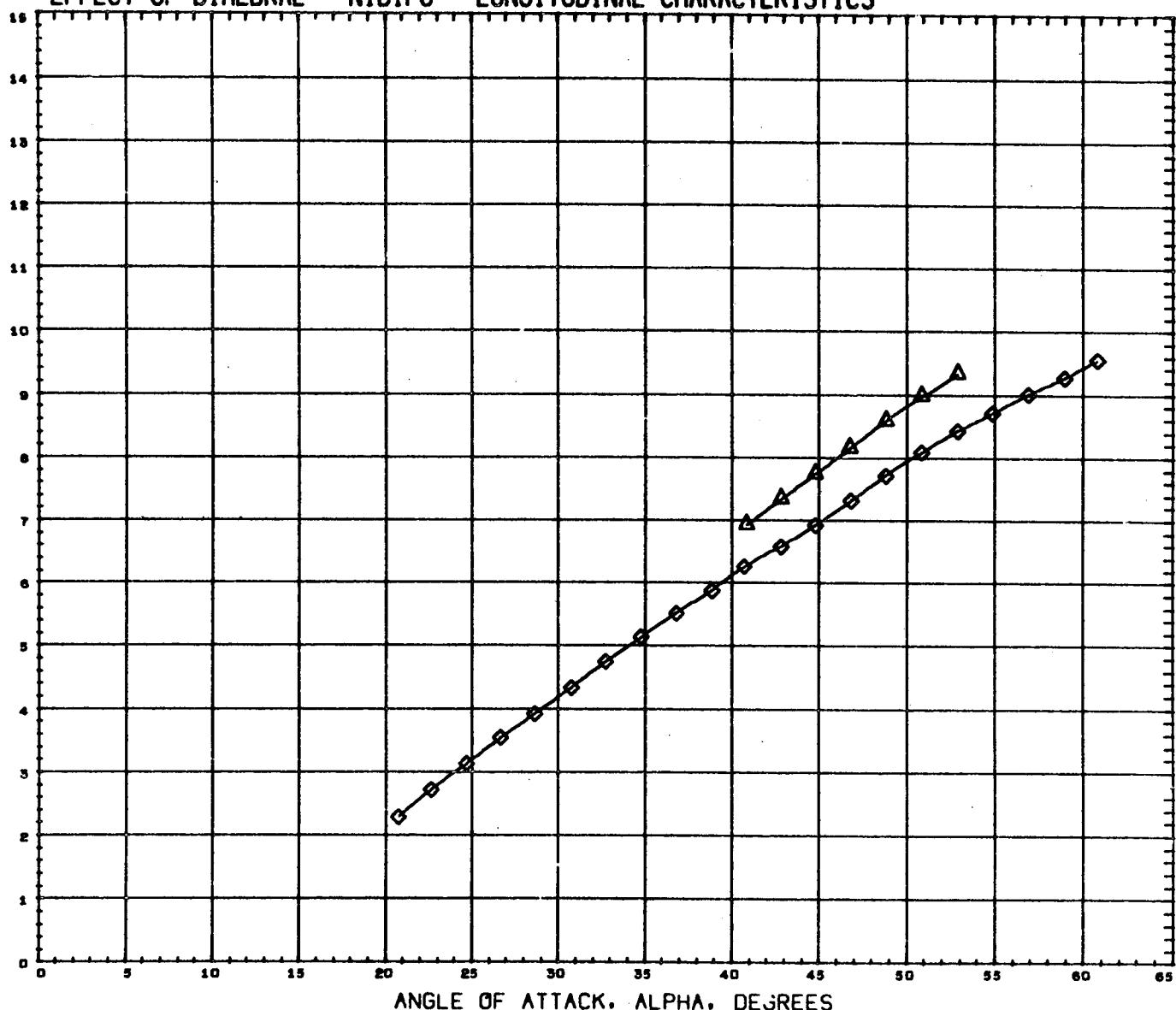
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 BREF 7.2230 IN.
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 YMRF 0.0000 IN.
 ZMRF 0.0000 IN.
 SCALE 0.0034

MACH 1.196

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EFFECT OF DIHEDRAL - NIB1F6 - LONGITUDINAL CHARACTERISTICS

NORMAL FORCE COEFFICIENT, CN



DATA SET SYMBOL CONFIGURATION DESCRIPTION

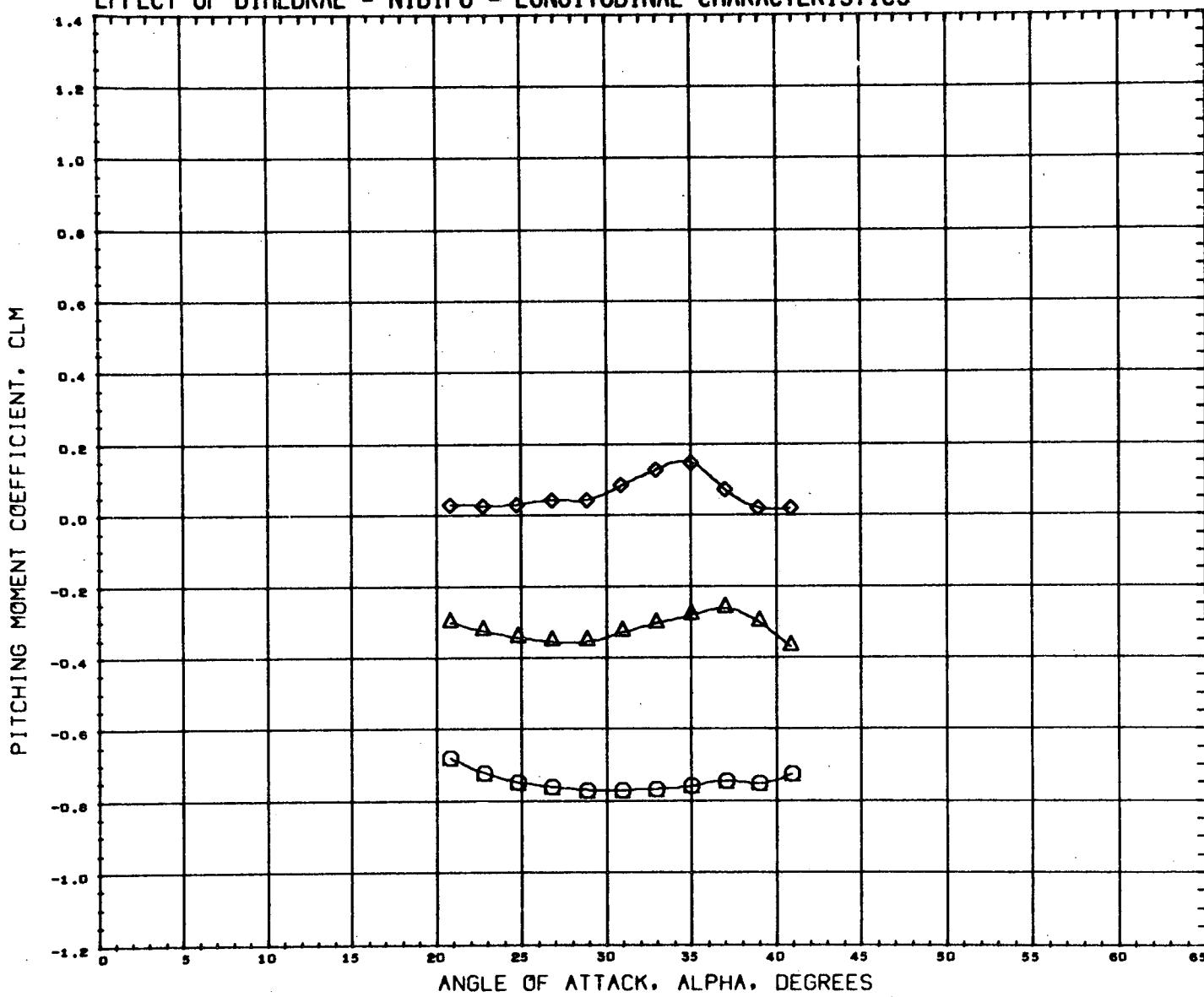
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 (I54907) MSFC 518 MSFC PRESSURE FED BOOSTER NIB1F6
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BETA DIHDRL
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 0.000 30.000
 0.000 45.000

REFERENCE INFORMATION
 SREF 0.9330 SQ.IN.
 LREF 7.2230 IN.
 BREF 7.2230 IN.
 XMRP 4.3340 IN.
 YMRP 0.0000 IN.
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 SCALE 0.0034 IN.

MACH 4.960

EFFECT OF DIHEDRAL - N1B1F6 - LONGITUDINAL CHARACTERISTICS



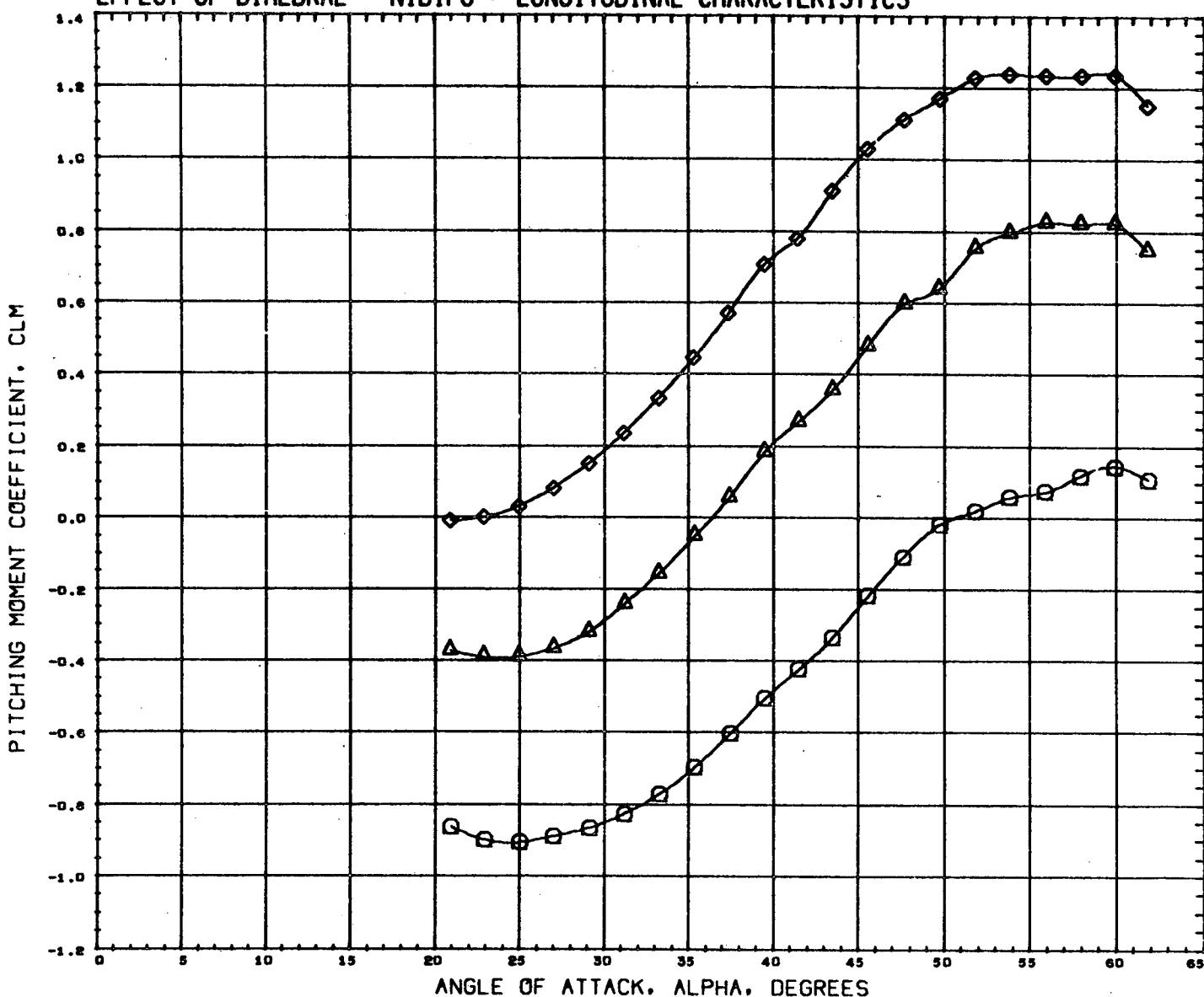
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BETA DIHDL
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 0.000 45.000

REFERENCE INFORMATION
 SREF 0.9330 SQ.IN.
 LREF 7.2230 IN.
 BREF 7.2230 IN.
 XMRP 4.3340 IN.
 YMRP 0.0000 IN.
 ZMRP 0.0000 IN.
 SCALE 0.0034

MACH 0.599

EFFECT OF DIHEDRAL - N1B1F6 - LONGITUDINAL CHARACTERISTICS



DATA SET SYMBOL CONFIGURATION DESCRIPTION
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 (054921) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6

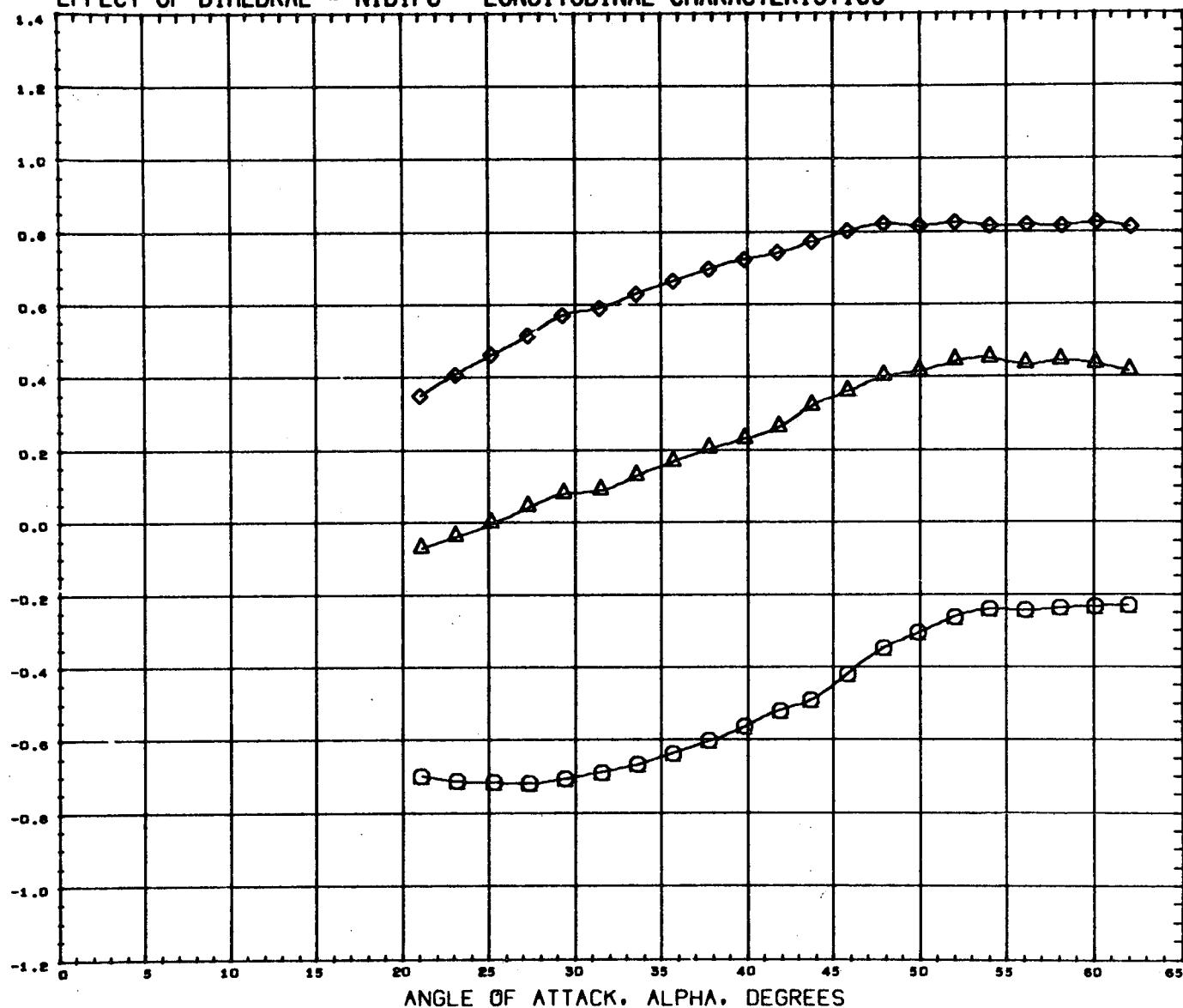
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REFERENCE INFORMATION
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 BREF 7.2230 IN.
 XMRP 4.3340 IN.
 YMRP 0.0000 IN.
 ZMRP 0.0000 IN.
 SCALE 0.0034

MACH 0.899

EFFECT OF DIHEDRAL - N1B1F6 - LONGITUDINAL CHARACTERISTICS

PITCHING MOMENT COEFFICIENT, CLM



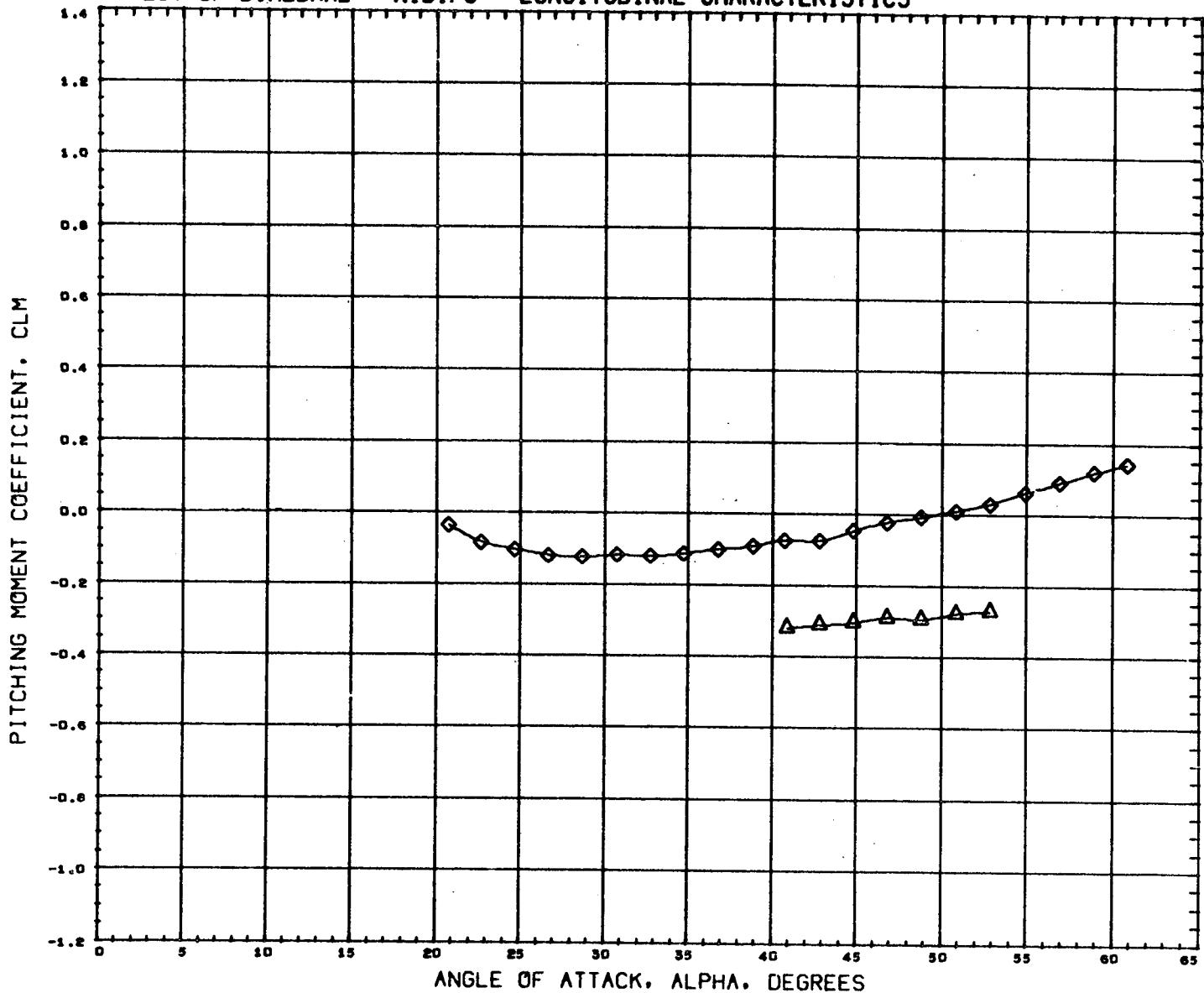
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BETA DIHDL
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 0.000 45.000

REFERENCE INFORMATION
 SREF 0.9330 SQ.IN.
 LREF 7.2230 IN.
 BREF 7.2230 IN.
 XMRP 4.3340 IN.
 YMRP 0.0000 IN.
 ZMRP 0.0000 IN.
 SCALE 0.0034

MACH 1.198

EFFECT OF DIHEDRAL - N1B1F6 - LONGITUDINAL CHARACTERISTICS



DATA SET SYMBOL CONFIGURATION DESCRIPTION

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 (IS4921) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6

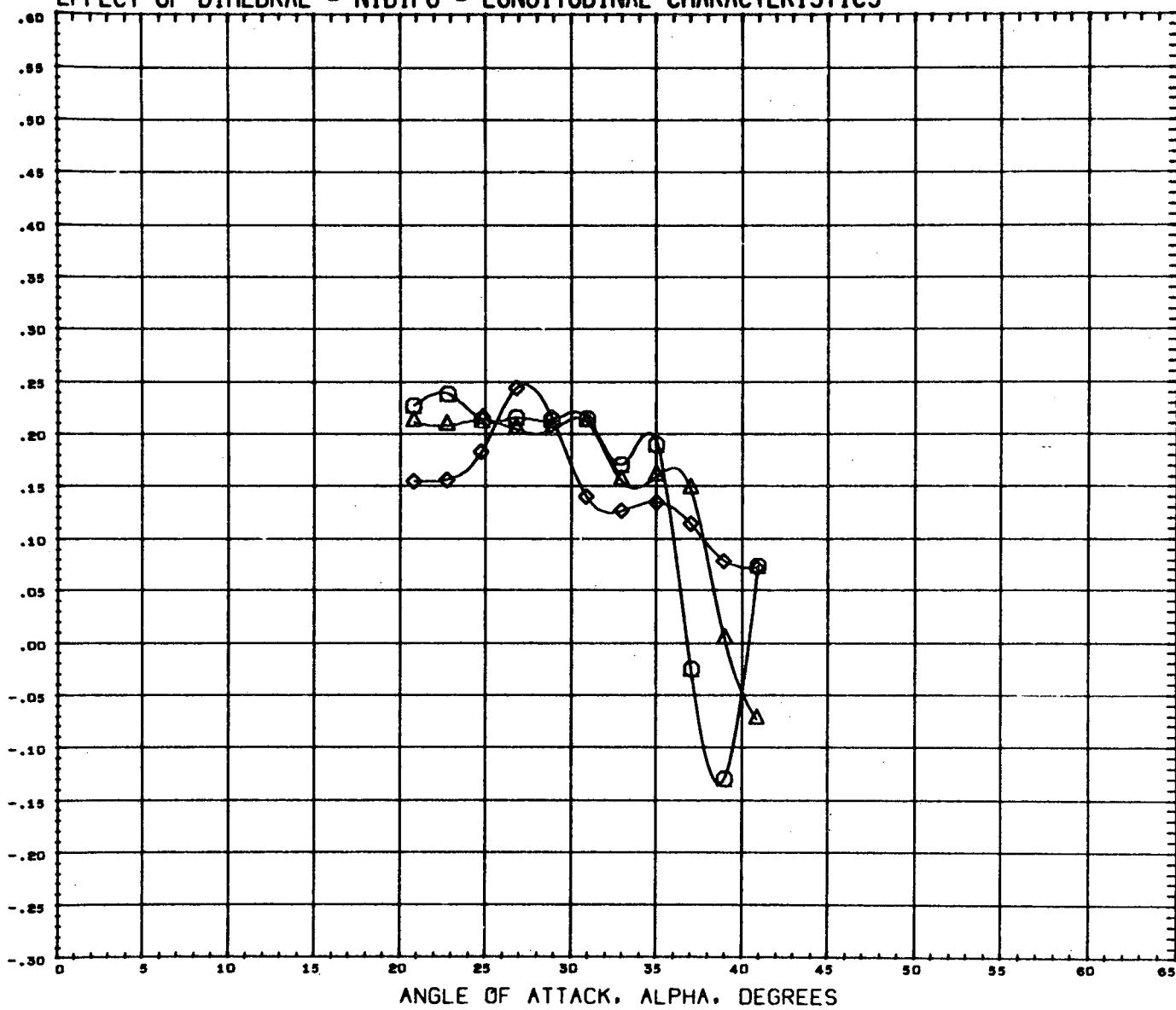
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0.000 45.000

REFERENCE INFORMATION
SREF 0.9330 SQ. IN.
LREF 7.2230 IN.
BREF 7.2230 IN.
XMRP 4.3340 IN.
YMRP 0.0000 IN.
ZMRP 0.0000 IN.
SCALE 0.0034

MACH 4.960

EFFECT OF DIHEDRAL - N1B1F6 - LONGITUDINAL CHARACTERISTICS

LOCAL NORMAL FORCE COEFFICIENT SLOPE, CN/A, PER DEGREE



DATA SET SYMBOL CONFIGURATION DESCRIPTION

(154914) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6
 (154907) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6
 (054921) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6

BETA DIHDRL

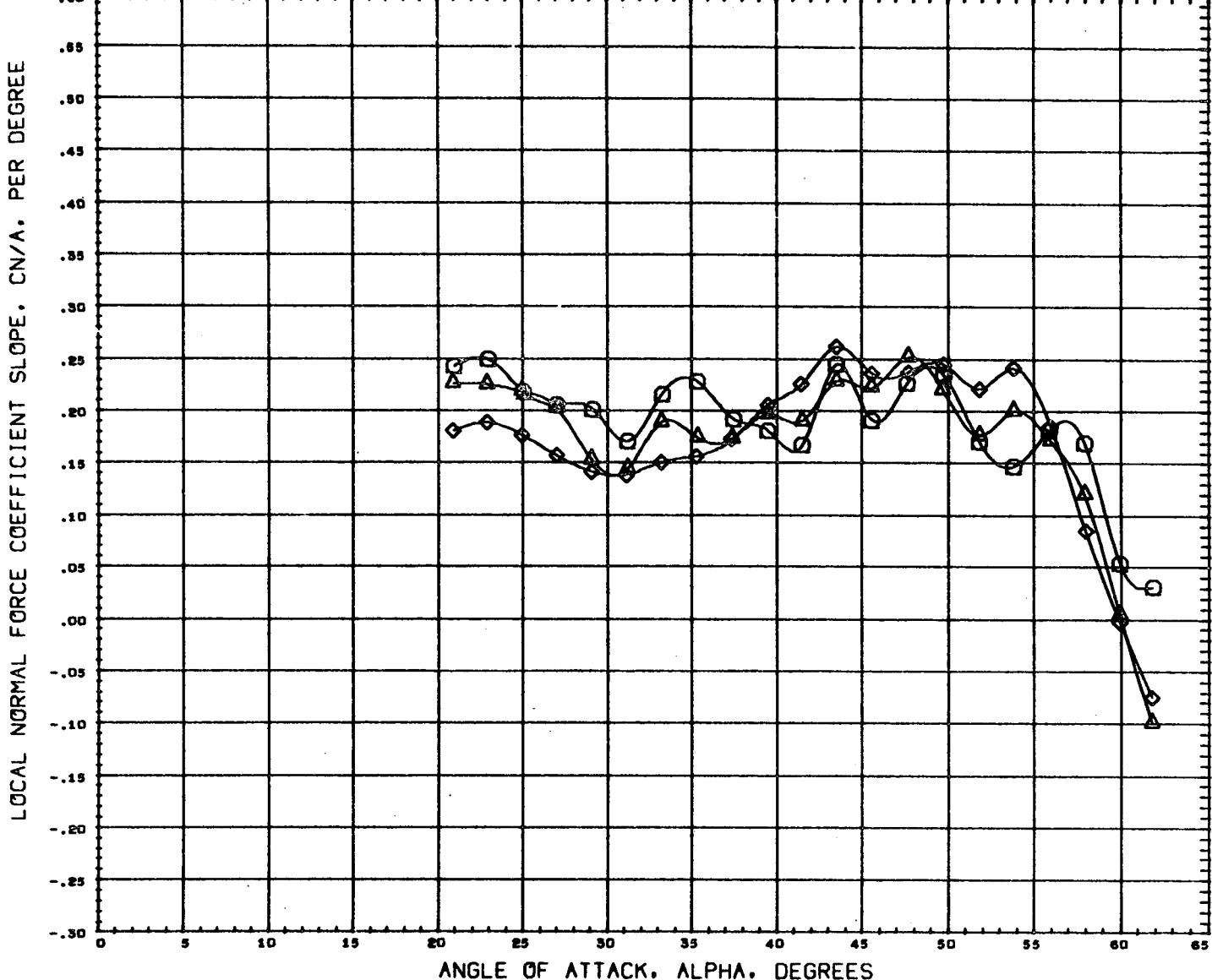
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REFERENCE INFORMATION

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BREF	7.2230	IN.
XNRP	4.3340	IN.
YNRP	0.0000	IN.
ZNRP	0.0000	IN.
SCALE	0.0034	

MACH 0.599

EFFECT OF DIHEDRAL - N1B1F6 - LONGITUDINAL CHARACTERISTICS



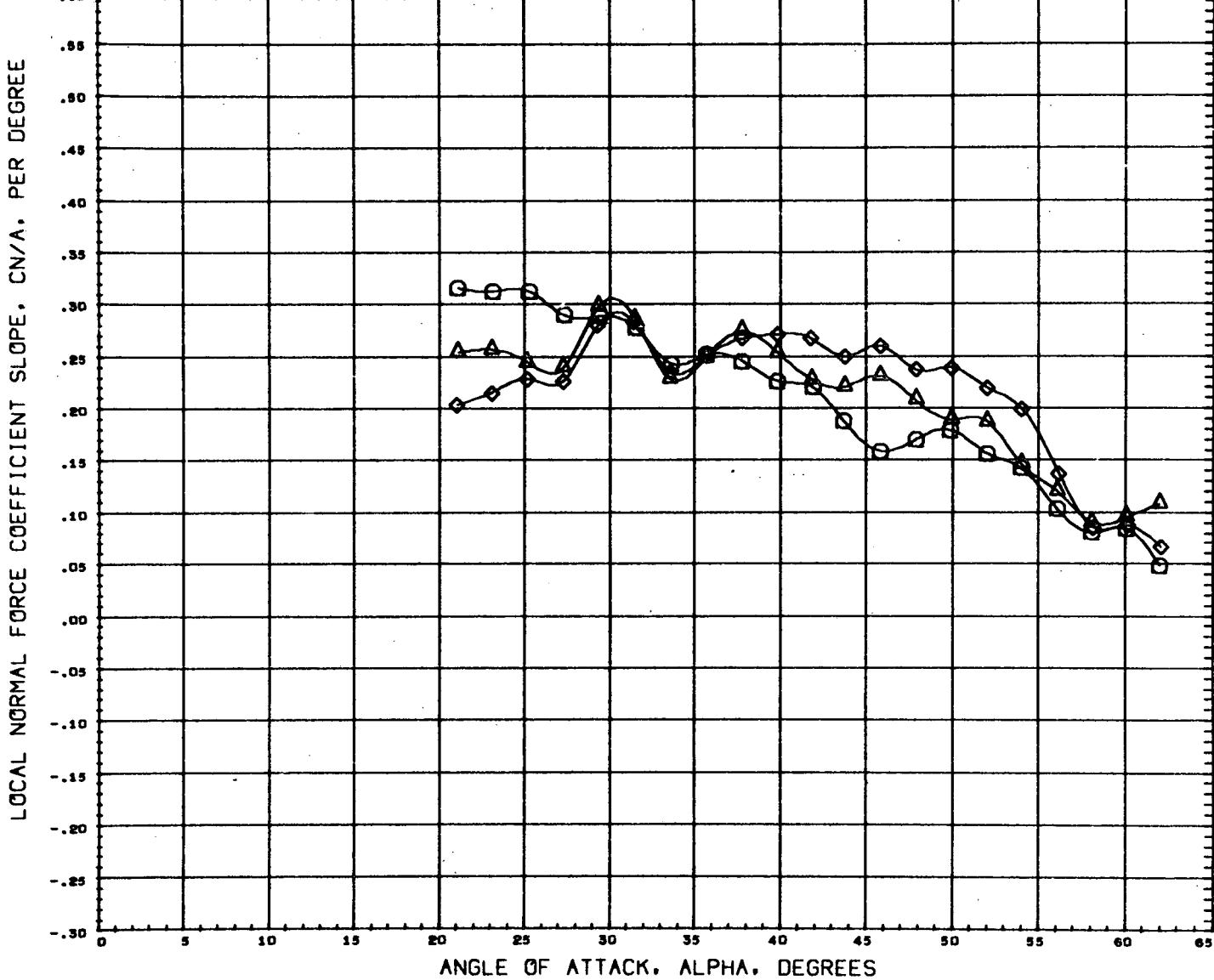
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 (I549D7) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6
 (I54921) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6

BETA D1MDRL
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 0.000 30.000
 0.000 45.000

REFERENCE INFORMATION
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 LREF 7.2230 IN.
 BREF 7.2230 IN.
 XMRP 4.3340 IN.
 YMRP 0.0000 IN.
 ZMRP 0.0000 IN.
 SCALE 0.0034

MACH 0.899

EFFECT OF DIHEDRAL - N1B1F6 - LONGITUDINAL CHARACTERISTICS



DATA SET SYMBOL CONFIGURATION DESCRIPTION

(154914) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6
 (154907) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6
 (054921) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6

BETA DIHDRL

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 0.000 45.000

REFERENCE INFORMATION

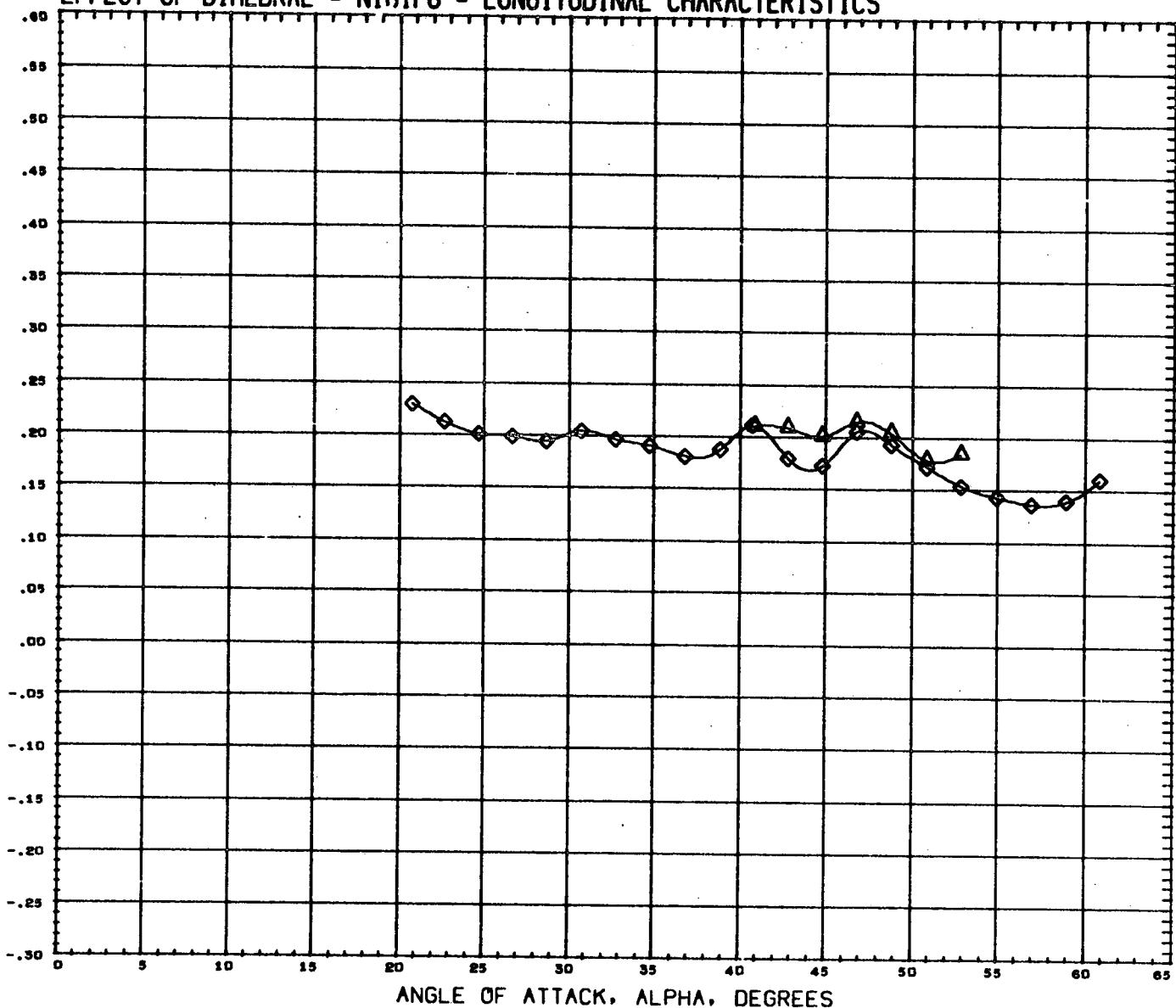
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 BREF 7.2230 IN.
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 YMRP 0.0000 IN.
 ZMRP 0.0000 IN.
 SCALE 0.0034

MACH 1.198

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EFFECT OF DIHEDRAL - N1B1F6 - LONGITUDINAL CHARACTERISTICS

LOCAL NORMAL FORCE COEFFICIENT SLOPE, CN/A. PER DEGREE



DATA SET SYMBOL CONFIGURATION DESCRIPTION

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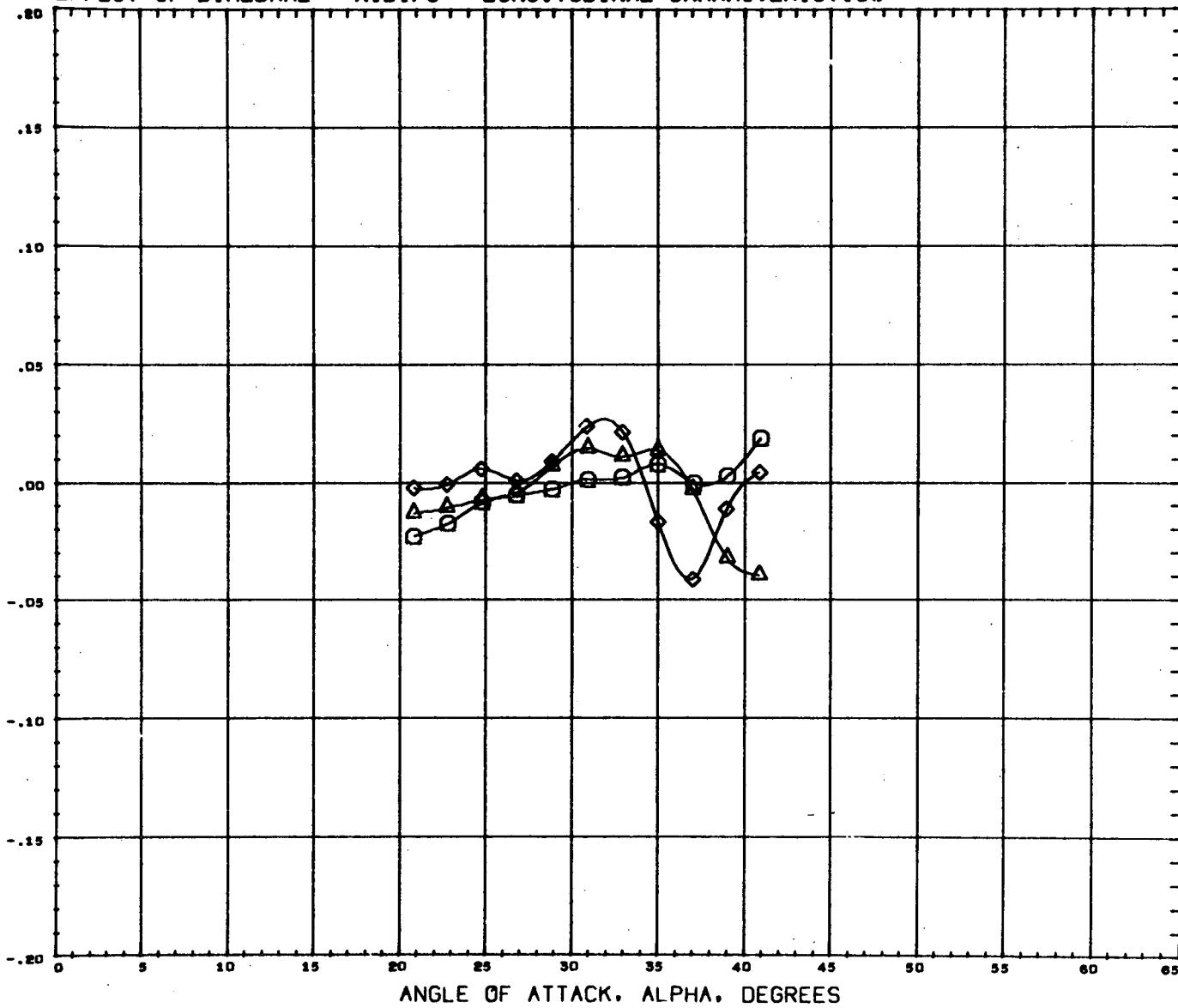
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REFERENCE INFORMATION
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 BREF 7.2230 IN.
 XMRP 4.3340 IN.
 YMRP 0.0000 IN.
 ZMRP 0.0000 IN.
 SCALE 0.0034

MACH 4.960

EFFECT OF DIHEDRAL - N1B1F6 - LONGITUDINAL CHARACTERISTICS

LOCAL PITCHING MOMENT COEFFICIENT SLOPE, CLM/A, PER DEGREE



DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (154914) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6
 (154907) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6
 (054921) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6

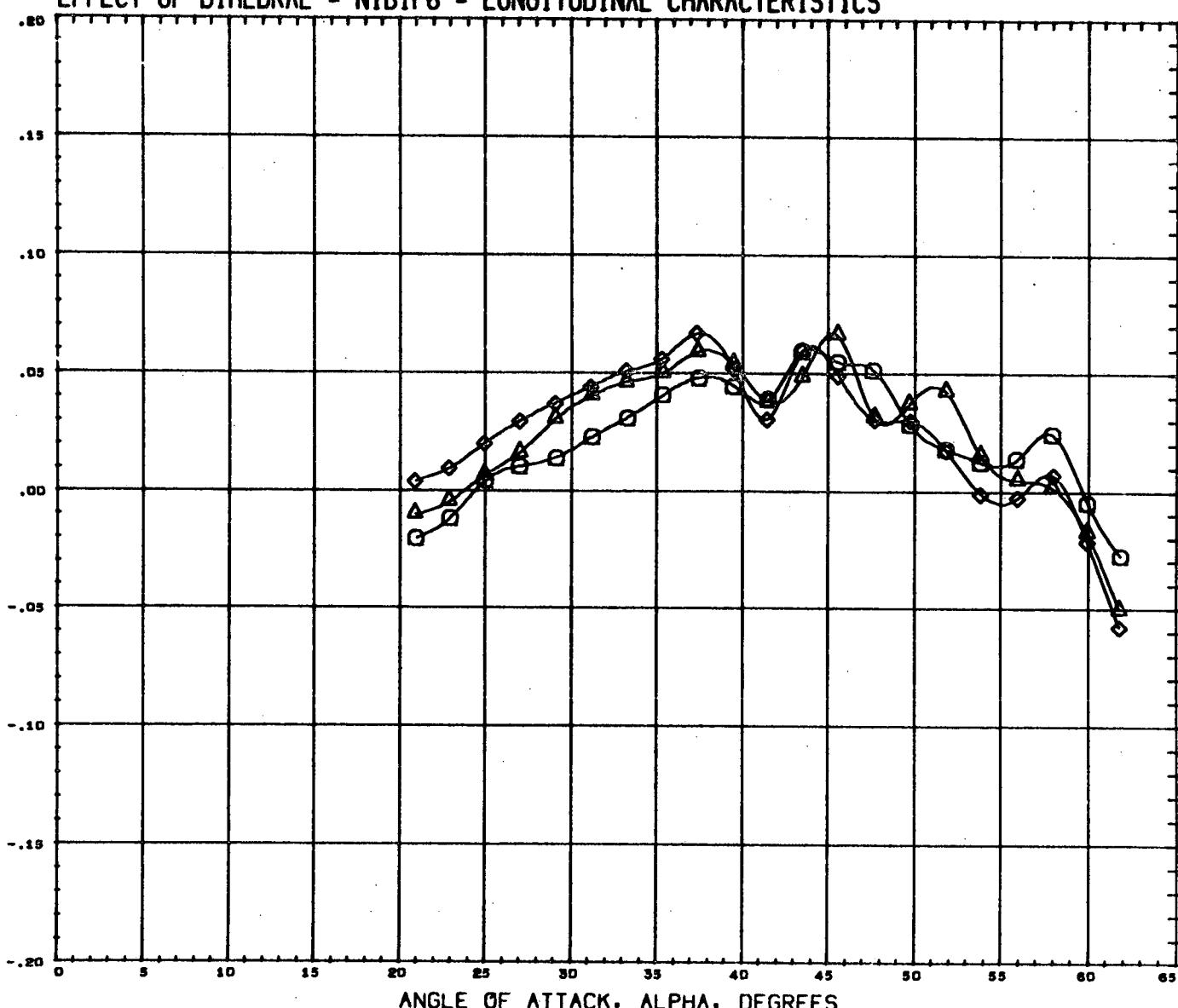
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 BREF 7.2230 IN.
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 YMNP 0.0000 IN.
 ZMNP 0.0000 IN.
 SCALE 0.0034

MACH 0.599

EFFECT OF DIHEDRAL - N1B1F6 - LONGITUDINAL CHARACTERISTICS

LOCAL PITCHING MOMENT COEFFICIENT SLOPE, CL/M/A, PER DEGREE



DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (154914) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6
 (154907) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6
 (054921) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6

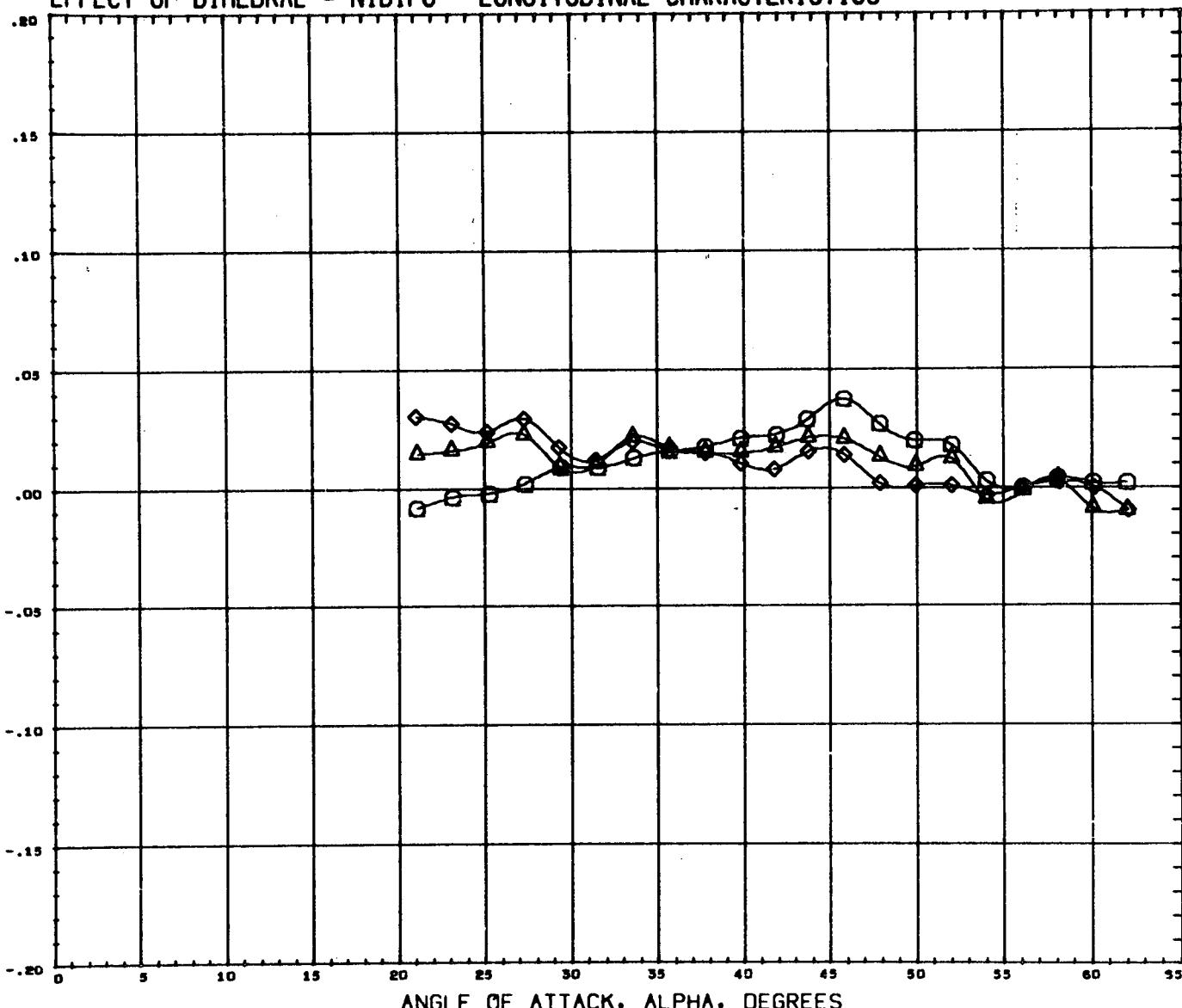
BETA DIHDL
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REFERENCE INFORMATION
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 BREF 7.2230 IN.
 XMRP 4.3340 IN.
 YMRP 0.0000 IN.
 ZMRP 0.0000 IN.
 SCALE 0.0034

MACH 0.699

EFFECT OF DIHEDRAL - N1B1F6 - LONGITUDINAL CHARACTERISTICS

LOCAL PITCHING MOMENT COEFFICIENT SLOPE, CLM/A, PER DEGREE



DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (154914) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6
 (154907) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6
 (054921) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6

BETA DMDRL
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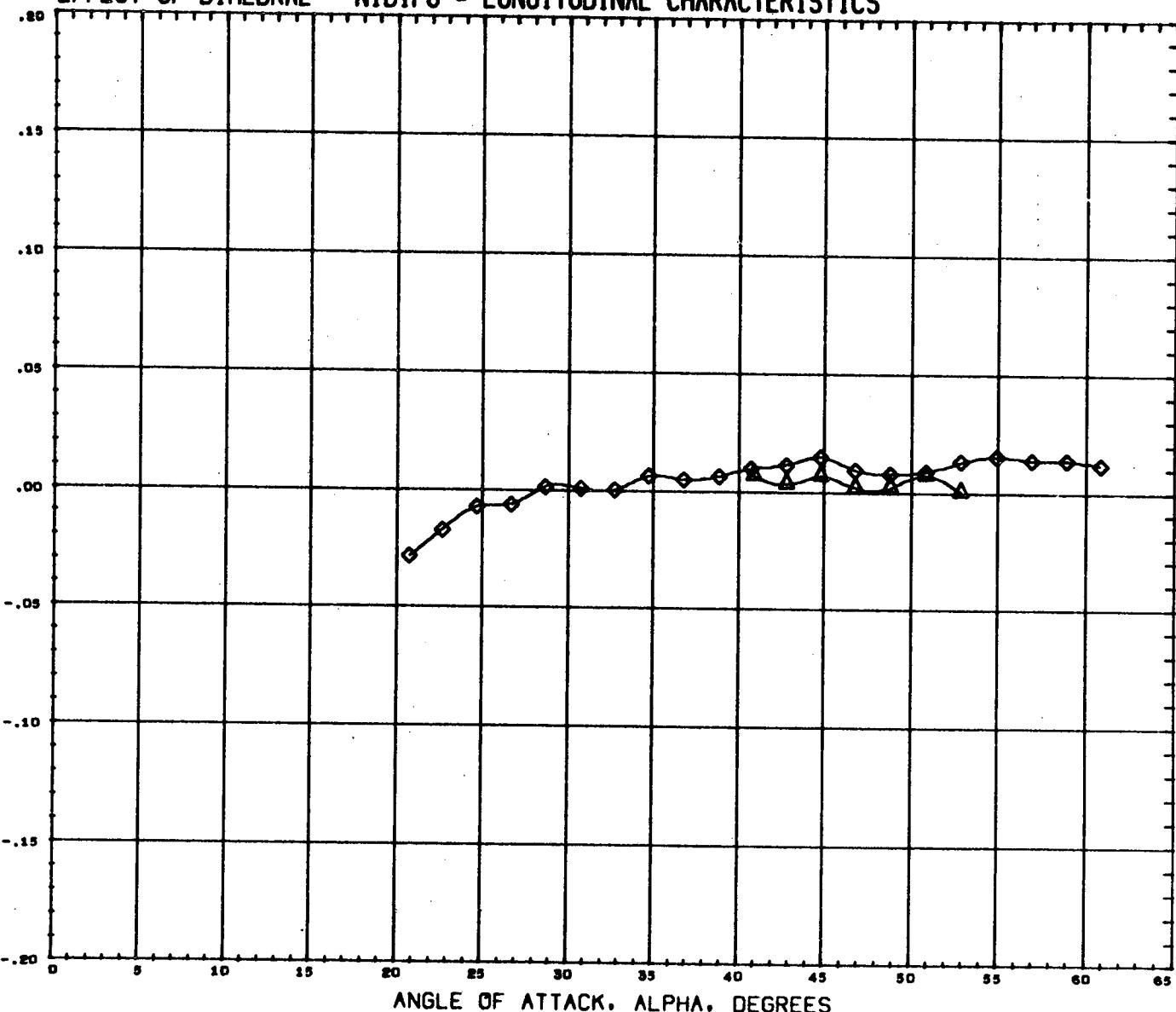
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 BREF 7.2230 IN.
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 YMMP 0.0000 IN.
 ZMMP 0.0000 IN.
 SCALE 0.0034

MACH 1.198

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EFFECT OF DIHEDRAL - N181F6 - LONGITUDINAL CHARACTERISTICS

LOCAL PITCHING MOMENT COEFFICIENT SLOPE, CLM/A, PER DEGREE



DATA SET SYMBOL CONFIGURATION DESCRIPTION

(154914) DATA NOT AVAILABLE FOR ALL CONDITIONS
 (154907) MSFC 518 MSFC PRESSURE FED BOOSTER N181F6
 (054921) MSFC 518 MSFC PRESSURE FED BOOSTER N181F6

BETA DIHDRL

0.000	0.000
0.000	30.000
0.000	45.000

REFERENCE INFORMATION

SREF	0.9330	SQ. IN.
LREF	7.2230	IN.
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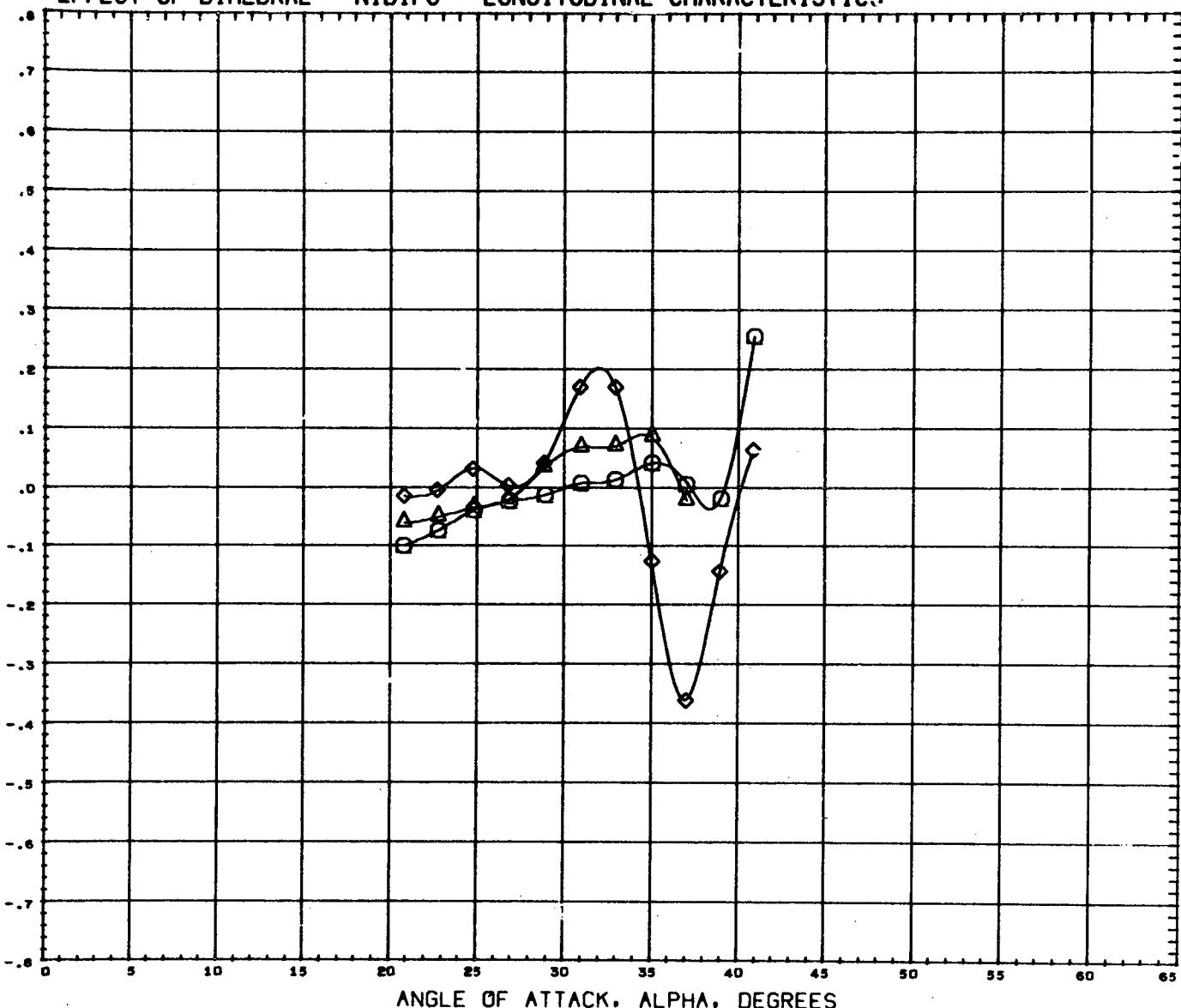
MACH 4.960

PAGE 134

4 ④

EFFECT OF DIHEDRAL - N1B1F6 - LONGITUDINAL CHARACTERISTICS

LOCAL CENTER OF PRESSURE, XAC = CLM/A / CN/A



DATA SET SYMBOL CONFIGURATION DESCRIPTION

(U54914) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6
 (U54907) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6
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BETA DIHDRL

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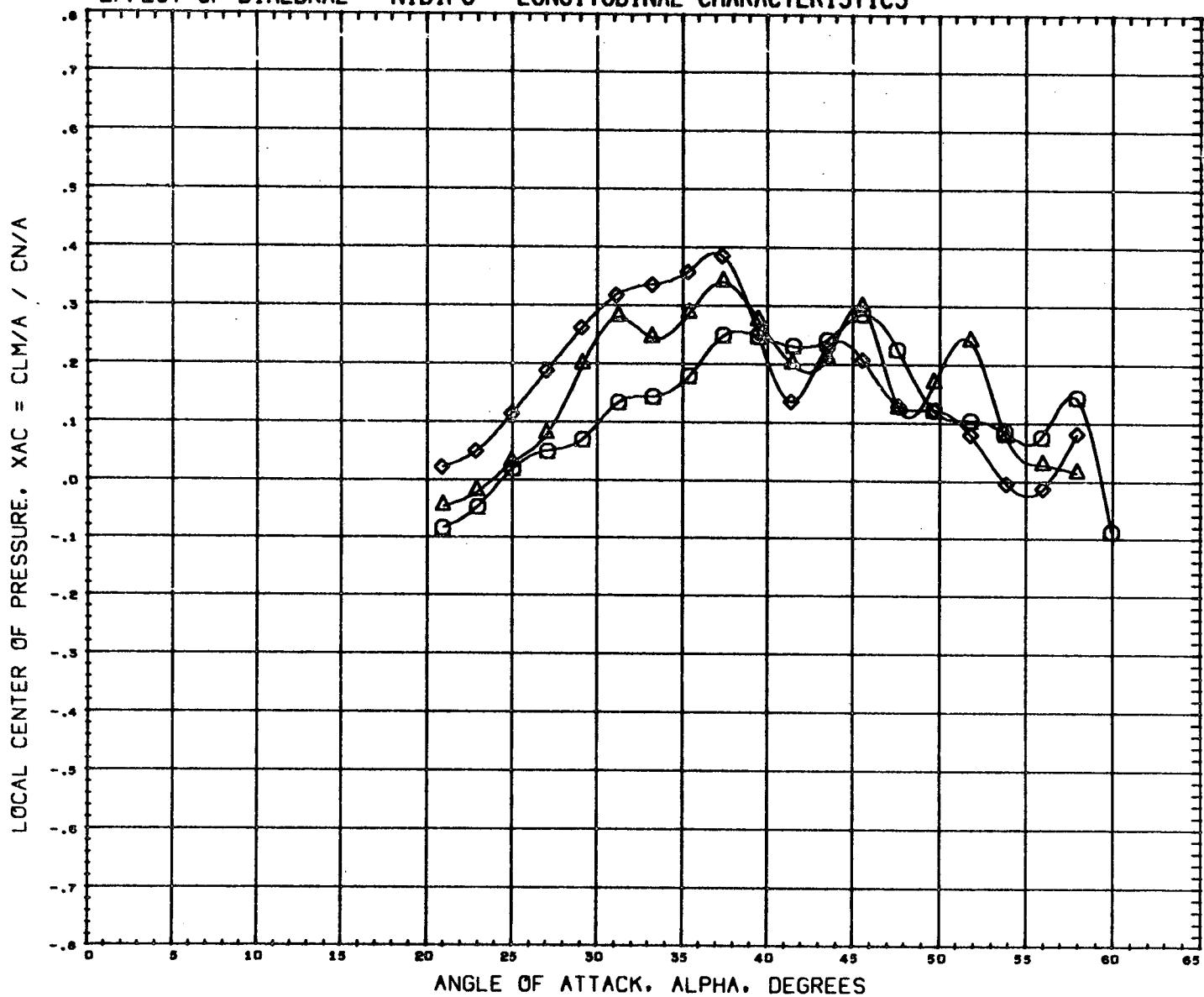
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 BREF 7.2230 IN.
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 YNRP 0.0000 IN.
 ZNRP 0.0000 IN.
 SCALE 0.0034

MACH 0.599

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EFFECT OF DIHEDRAL - N1B1F6 - LONGITUDINAL CHARACTERISTICS



DATA SET SYMBOL CONFIGURATION DESCRIPTION

(Q54914)	(Q)	MSFC 518	MSFC PRESSURE FED BOOSTER	N1B1F6	BETA	DIHDRL
(Q54907)	(A)	MSFC 518	MSFC PRESSURE FED BOOSTER	N1B1F6	0.000	0.000
(U54921)	(D)	MSFC 518	MSFC PRESSURE FED BOOSTER	N1B1F6	0.000	30.000

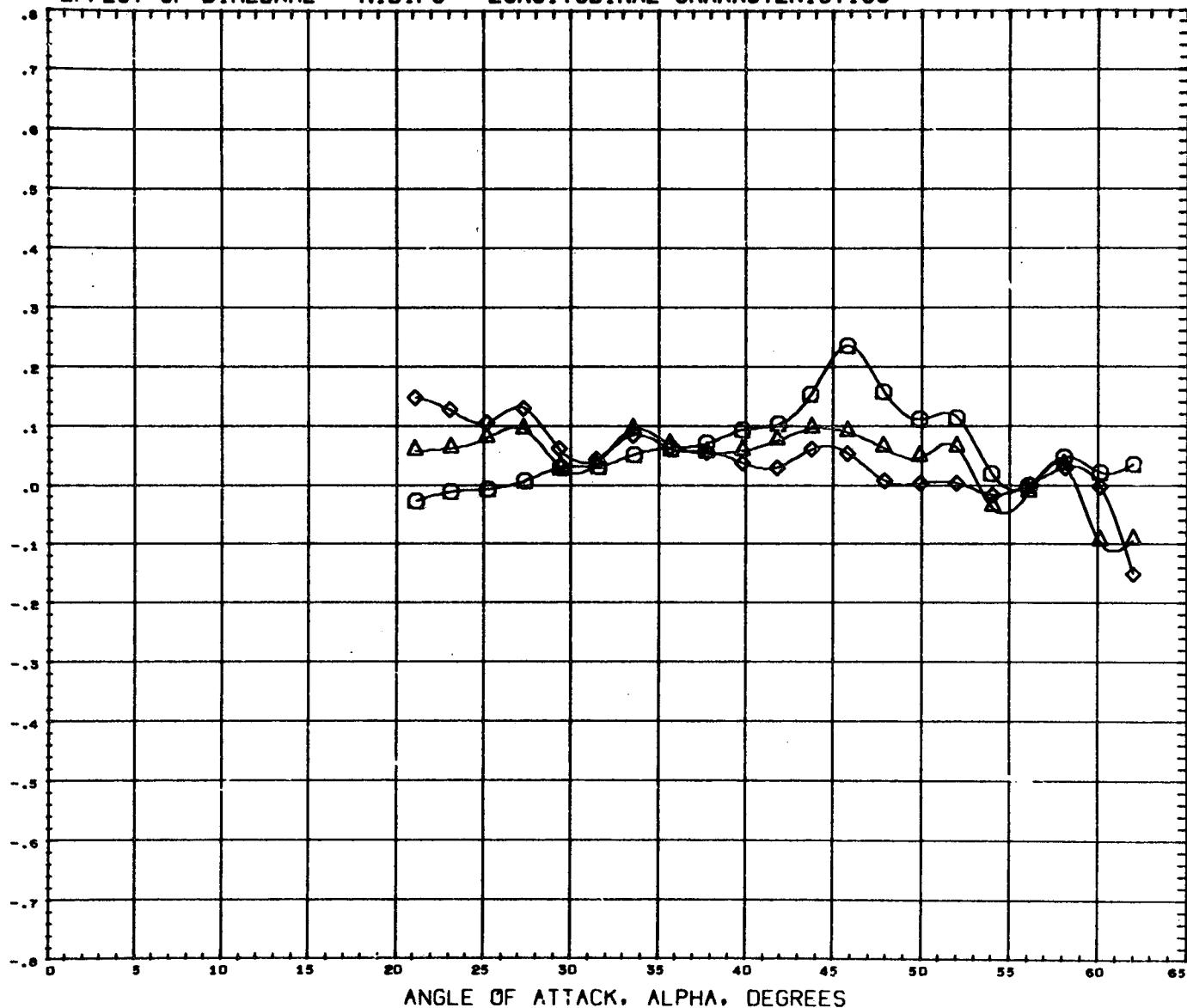
BETA	DIHDRL
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0.000	30.000
0.000	45.000

REFERENCE INFORMATION		
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BREF	7.2230	IN.
XMRP	4.3340	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

MACH 0.699

EFFECT OF DIHEDRAL - N1B1F6 - LONGITUDINAL CHARACTERISTICS

LOCAL CENTER OF PRESSURE, XAC = CLM/A / CNA/A



DATA SET SYMBOL CONFIGURATION DESCRIPTION

(Q54914) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6
 (Q54907) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6
 (U54921) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6

BETA DIHDRL

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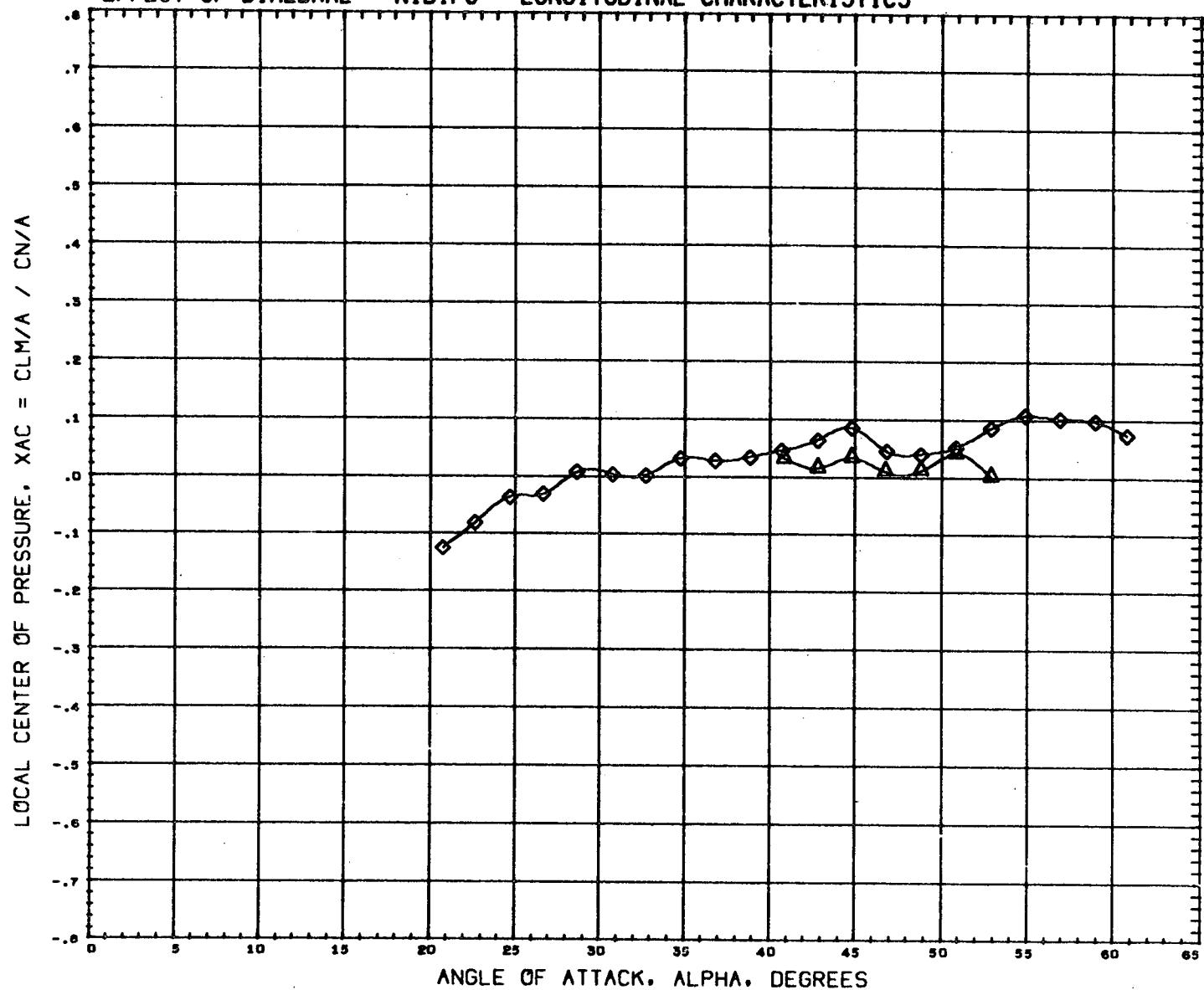
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 BREF 7.2230 IN.
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 YMHP 0.0000 IN.
 ZMRP 0.0000 IN.
 SCALE 0.0034

MACH 1.198

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EFFECT OF DIHEDRAL - N1B1F6 - LONGITUDINAL CHARACTERISTICS



DATA SET SYMBOL CONFIGURATION DESCRIPTION

(U54914) DATA NOT AVAILABLE FOR ALL CONDITIONS
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BETA DIHDL

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REFERENCE INFORMATION

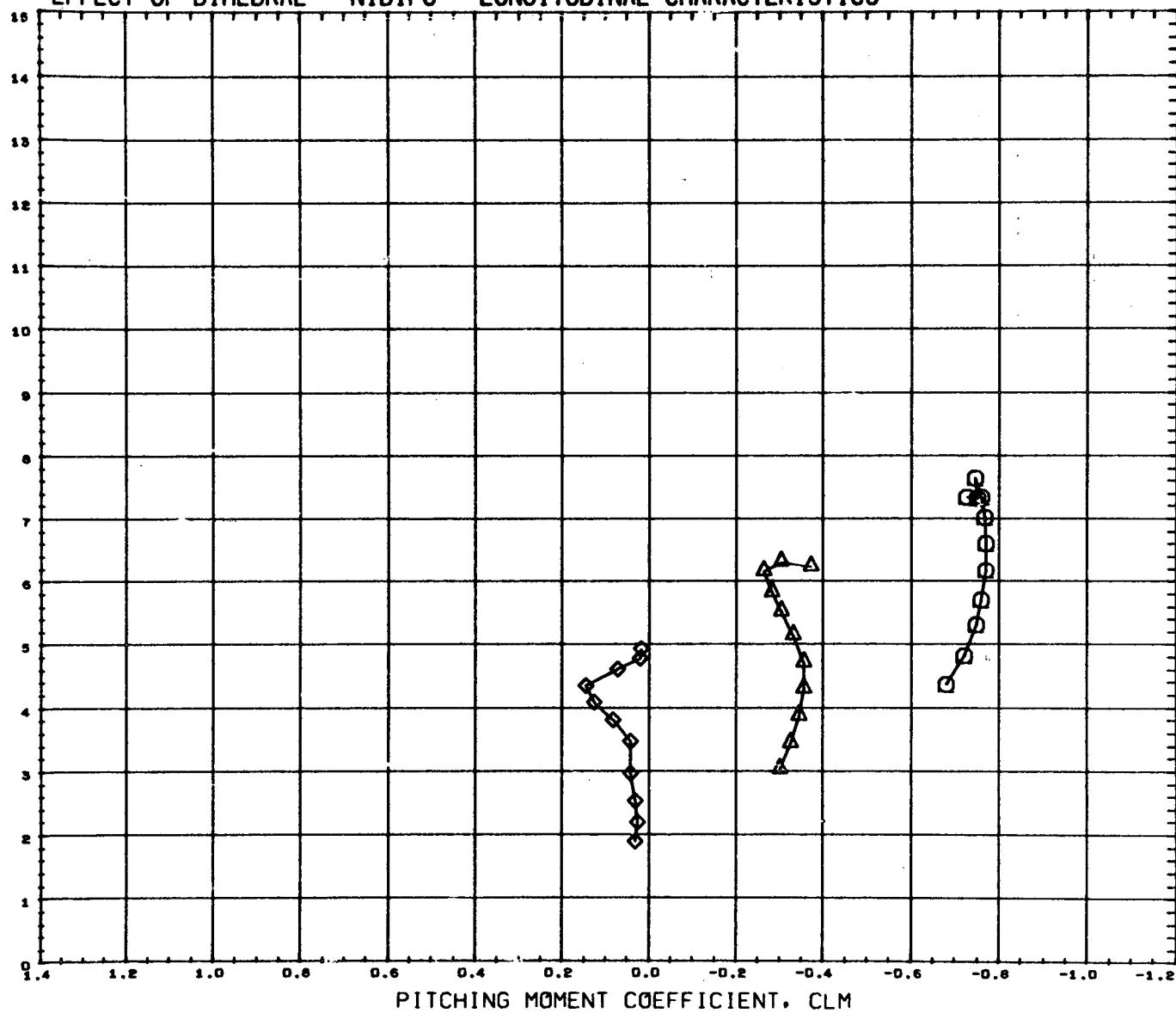
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 LREF 7.2230 IN.
 BREF 7.2230 IN.
 XMRF 4.3340 IN.
 YMRF 0.0000 IN.
 ZMRF 0.0000 IN.
 SCALE 0.0034

MACH 4.960

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EFFECT OF DIHEDRAL - N1B1F6 - LONGITUDINAL CHARACTERISTICS

NORMAL FORCE COEFFICIENT, CN



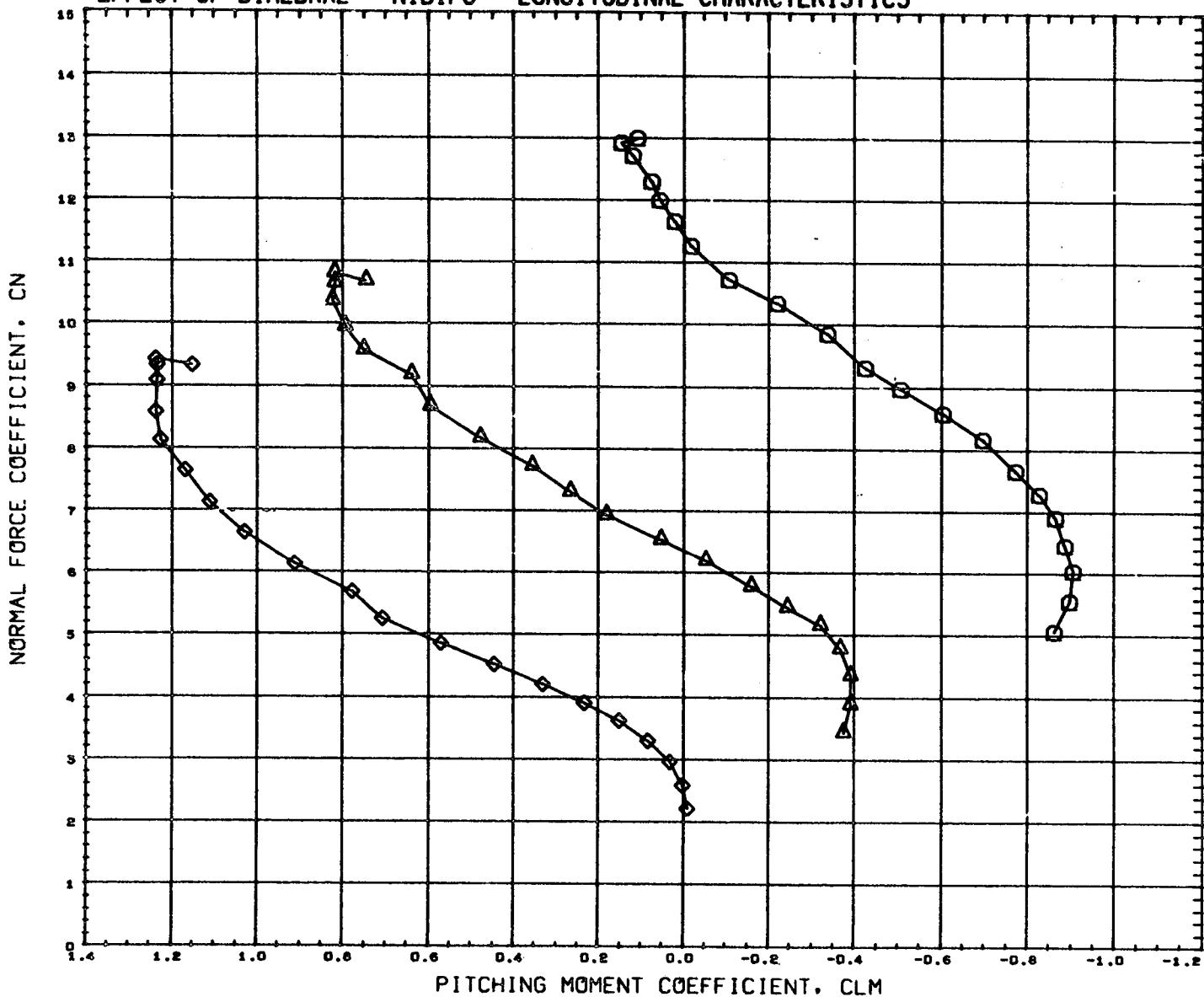
DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (154914) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6
 (154907) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6
 (054921) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6

BETA DIHDRL
 0.000 0.000
 0.000 30.000
 0.000 45.000

REFERENCE INFORMATION
 SREF 0.9330 SQ. IN.
 LREF 7.2230 IN.
 BREF 7.2230 IN.
 XMRP 4.3340 IN.
 YMRP 0.0000 IN.
 ZMRP 0.0000 IN.
 SCALE 0.0034

MACH 0.599

EFFECT OF DIHEDRAL - N1B1F6 - LONGITUDINAL CHARACTERISTICS



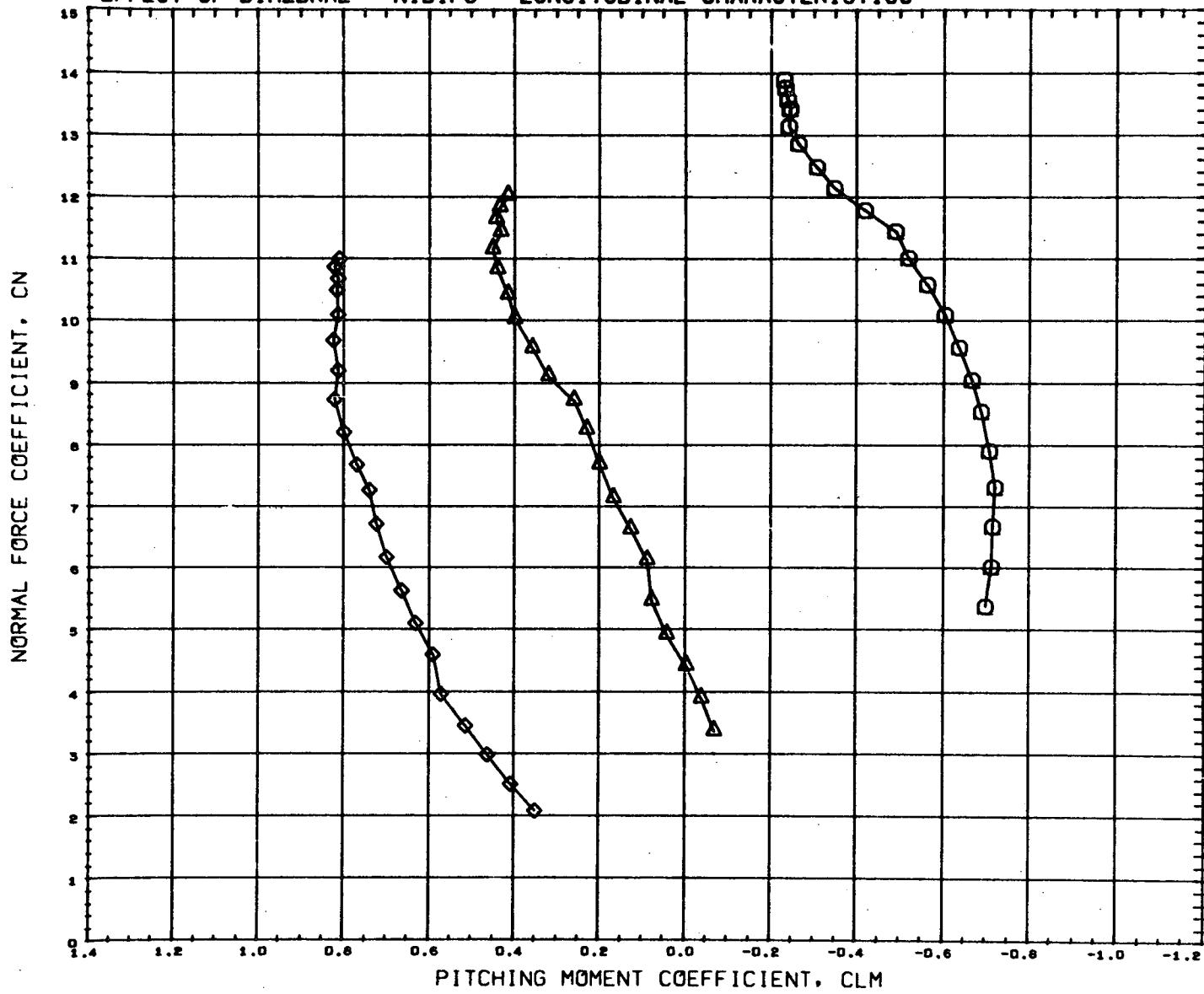
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 (154907) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6
 (054921) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6

BETA DIHDL
 0.000 0.000
 0.000 30.000
 0.000 45.000

REFERENCE INFORMATION
 SREF 0.9330 SQ. IN.
 LREF 7.2230 IN.
 BREF 7.2230 IN.
 XMNP 4.3340 IN.
 YMNP 0.0000 IN.
 ZMNP 0.0000 IN.
 SCALE 0.0034

MACH 0.699

EFFECT OF DIHEDRAL - N1B1F6 - LONGITUDINAL CHARACTERISTICS



DATA SET SYMBOL CONFIGURATION DESCRIPTION

(154914)		MSFC 518	MSFC PRESSURE FED BOOSTER	N1B1F6
(154907)		MSFC 518	MSFC PRESSURE FED BOOSTER	N1B1F6
(054921)		MSFC 518	MSFC PRESSURE FED BOOSTER	N1B1F6

BETA DIHEDRL

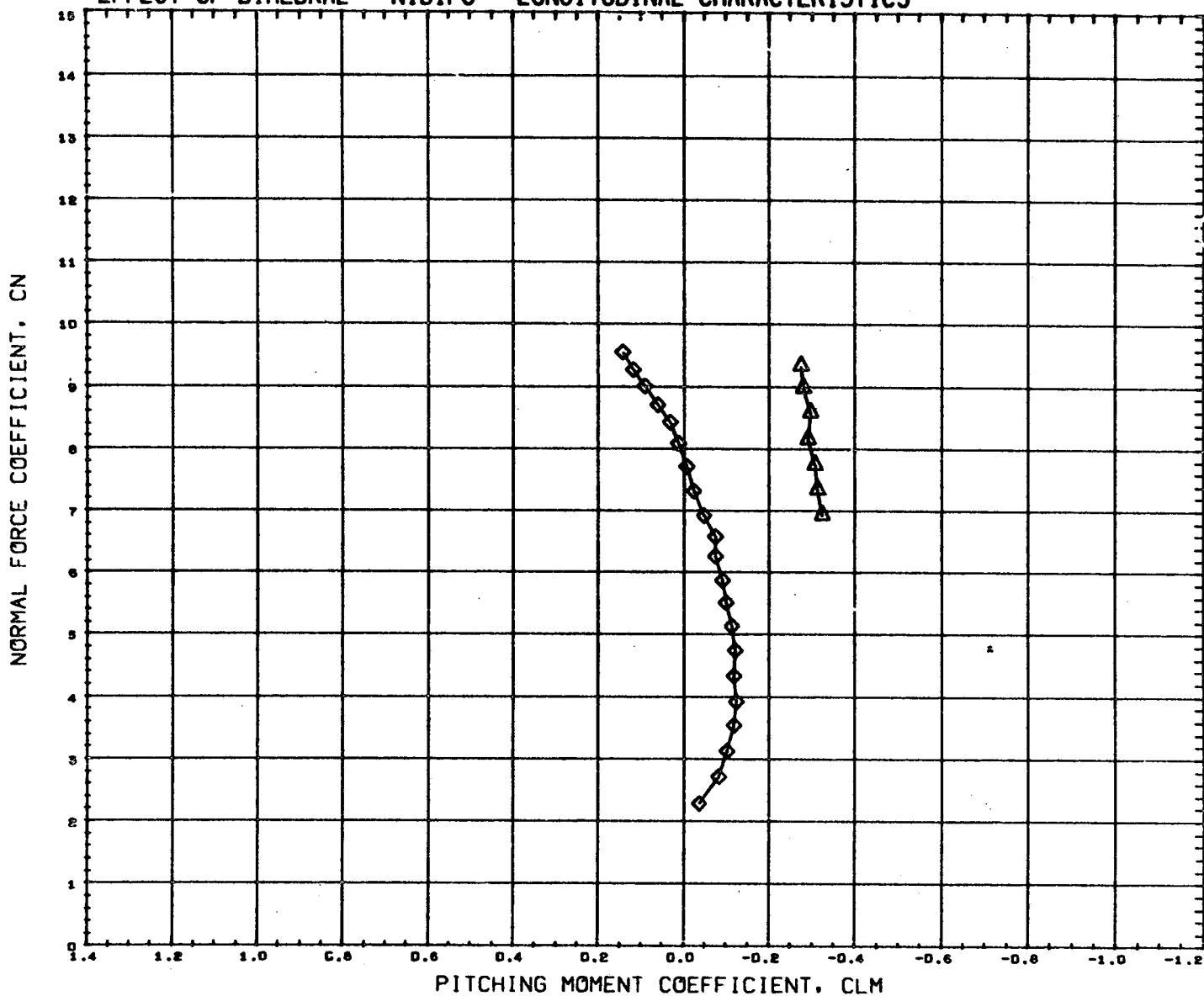
0.000	0.000
0.000	30.000
0.000	45.000

REFERENCE INFORMATION

SREF	0.9330	SQ.IN.
LREF	7.2230	IN.
BREF	7.2230	IN.
XMRP	4.3340	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

MACH 1.198

EFFECT OF DIHEDRAL - N1B1F6 - LONGITUDINAL CHARACTERISTICS



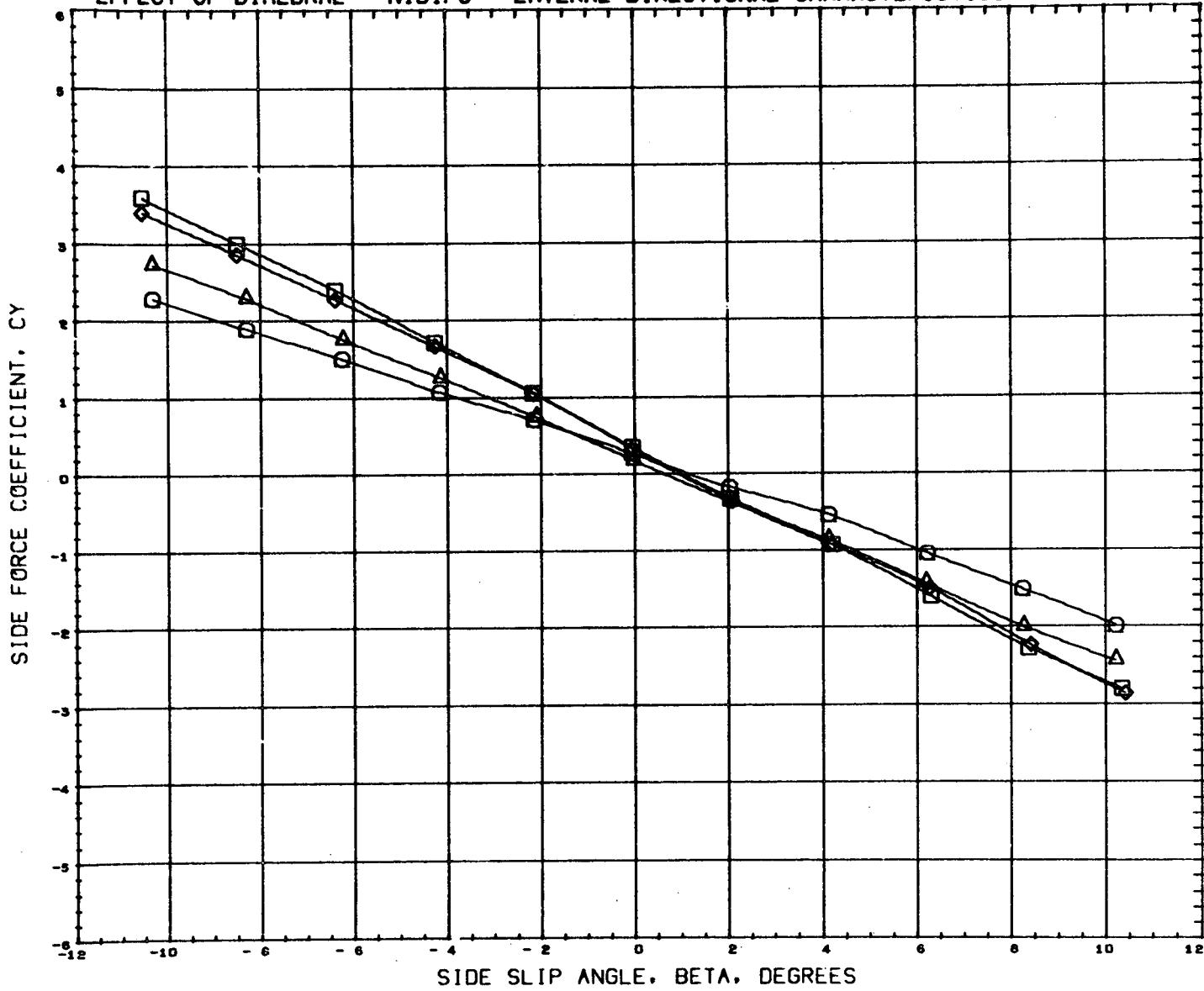
DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (154914) DATA NOT AVAILABLE FOR ALL CONDITIONS
 (154907) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6
 (054921) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6

BETA DIHDL
 0.000 0.000
 0.000 30.000
 0.000 45.000

REFERENCE INFORMATION
 SREF 0.9330 SQ. IN.
 LREF 7.2230 IN.
 BREF 7.2230 IN.
 XNRP 4.3340 IN.
 YNRP 0.0000 IN.
 ZNRP 0.0000 IN.
 SCALE 0.0034

MACH 4.960

EFFECT OF DIHEDRAL - N1B1F6 - LATERAL-DIRECTIONAL CHARACTERISTICS



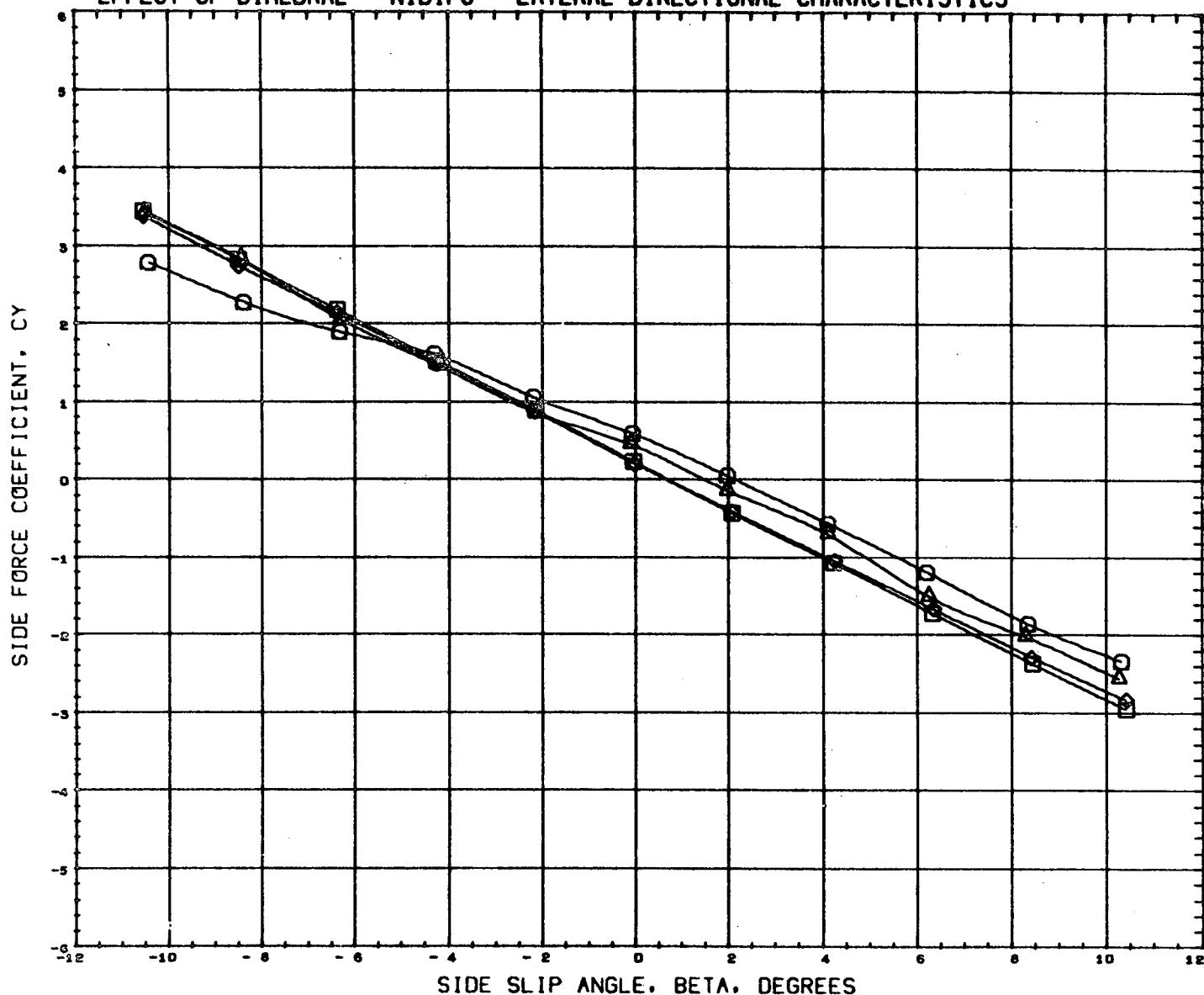
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 (S54010) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6
 (M54023) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6
 (S54009) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6
 (M54024) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6

MACH 0.901

ALPHA DIHDRL
 30.000 30.000
 30.000 45.000
 50.000 30.000
 50.000 45.000

REFERENCE INFORMATION
 SREF 0.9330 SQ.IN.
 LREF 7.2230 IN.
 BREF 7.2230 IN.
 XMRP 4.3340 IN.
 YMRP 0.0000 IN.
 ZMRP 0.0000 IN.
 SCALE 0.0034

EFFECT OF DIHEDRAL - N1B1F6 - LATERAL-DIRECTIONAL CHARACTERISTICS



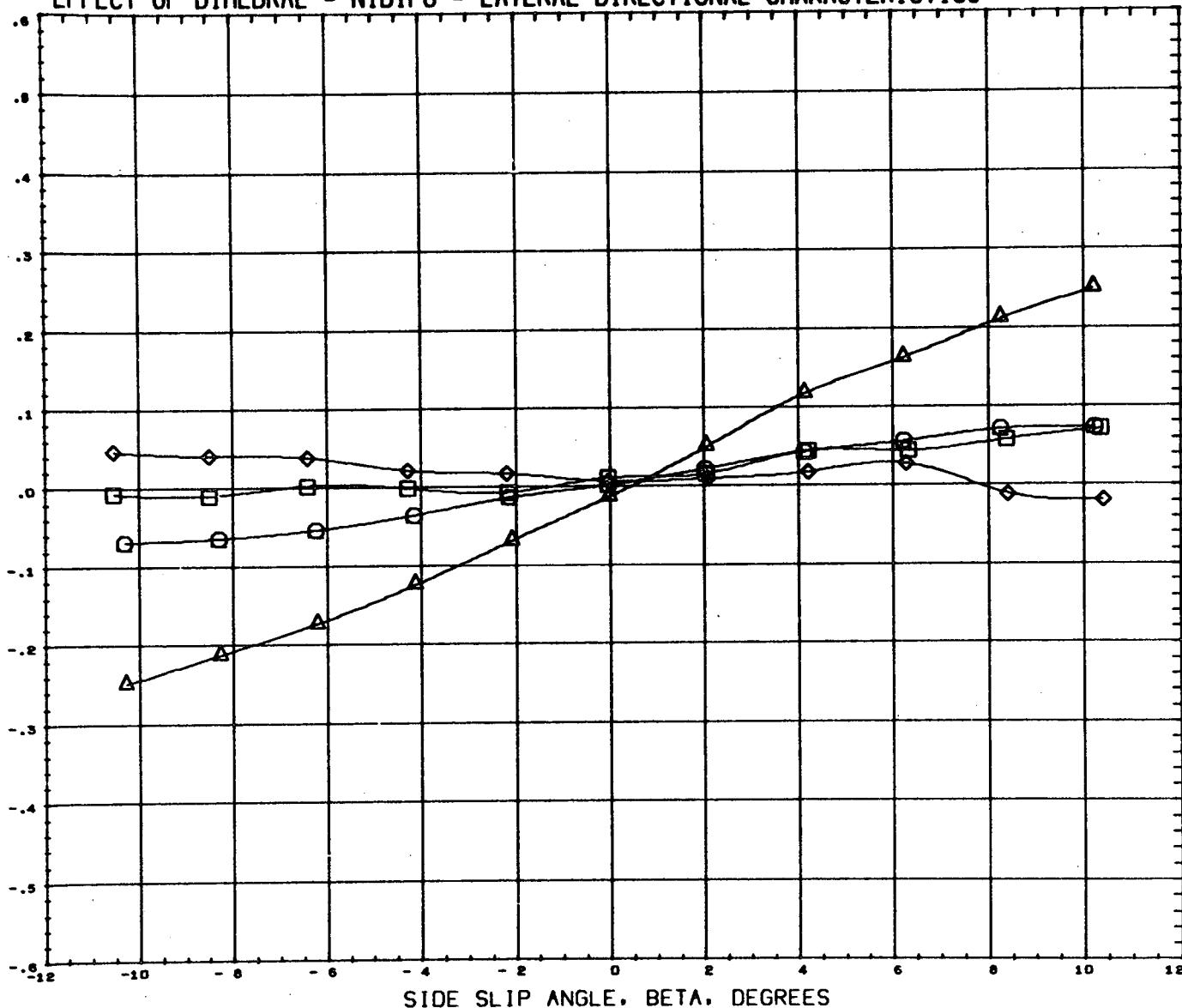
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(H54023)	MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6
(S54009)	MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6
(M54024)	MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6

ALPHA	DIHDL
30.000	30.000
30.000	45.000
50.000	30.000
50.000	45.000

REFERENCE INFORMATION
SREF 0.9350 SQ.IN.
LREF 7.2230 IN.
BREF 7.2230 IN.
XMRP 4.3340 IN.
YMRP 0.0000 IN.
ZMRP 0.0000 IN.
SCALE 0.0034

EFFECT OF DIHEDRAL - N1B1F6 - LATERAL-DIRECTIONAL CHARACTERISTICS

YAWING MOMENT COEFFICIENT, CYN (BODY AXIS)



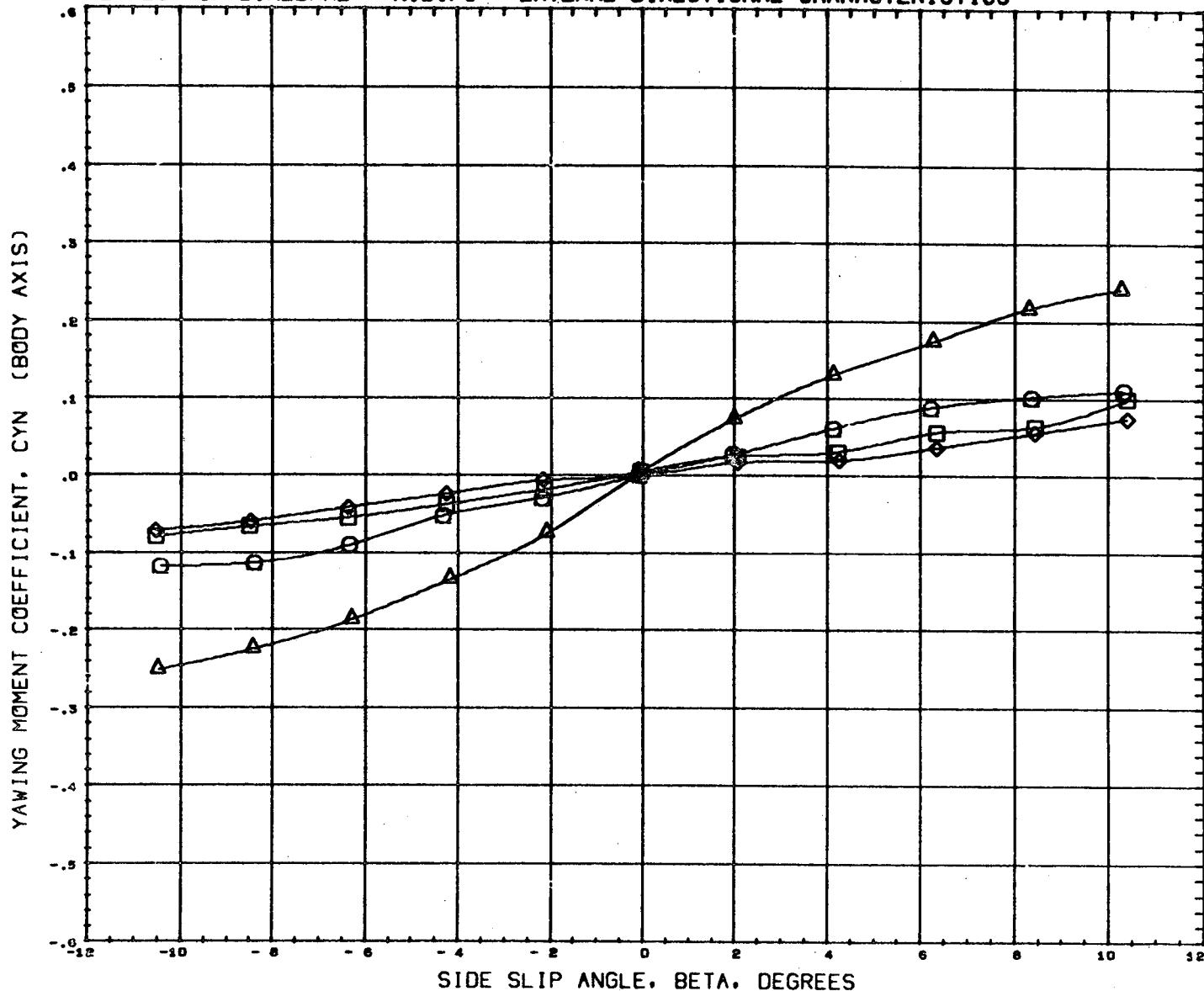
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 (M54023) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6
 (S54009) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6
 (M54024) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6

ALPHA DIHDL
 30.000 30.000
 30.000 45.000
 50.000 30.000
 50.000 45.000

REFERENCE INFORMATION
 SREF 0.9350 SQ.IN.
 LREF 7.2230 IN.
 BREF 7.2230 IN.
 XMMP 4.3340 IN.
 YMMP 0.0000 IN.
 ZMMP 0.0000 IN.
 SCALE 0.0034

MACH 0.901

EFFECT OF DIHEDRAL - N1B1F6 - LATERAL-DIRECTIONAL CHARACTERISTICS



DATA SET SYMBOL CONFIGURATION DESCRIPTION

(MS4010) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6
 (MS4023) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6
 (MS4009) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6
 (MS4024) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6

ALPHA DIHDL

30.000 30.000
 30.000 45.000
 50.000 30.000
 50.000 45.000

REFERENCE INFORMATION

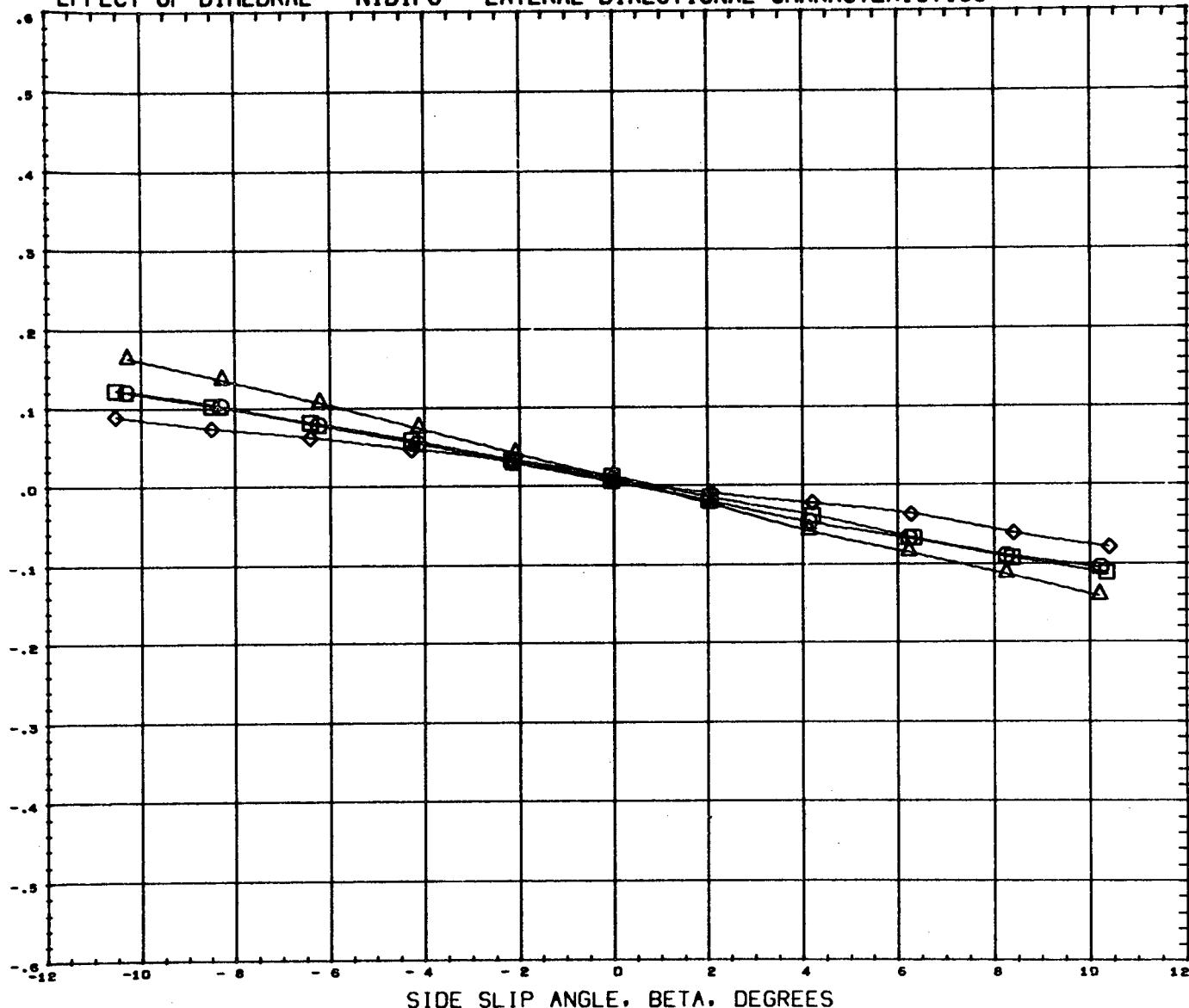
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 LREF 7.2230 IN.
 BREF 7.2230 IN.
 XMRP 4.3340 IN.
 YMRP 0.0000 IN.
 ZMRP 0.0000 IN.
 SCALE 0.0034

MACH 1.201

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ROLLING MOMENT COEFFICIENT, CBL (BODY AXIS)

EFFECT OF DIHEDRAL - N1B1F6 - LATERAL-DIRECTIONAL CHARACTERISTICS



DATA SET SYMBOL CONFIGURATION DESCRIPTION

(S54010) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6
 (M54023) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6
 (S54009) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6
 (M54024) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6

ALPHA DIHDLR
 30.000 30.000
 30.000 45.000
 50.000 30.000
 50.000 45.000

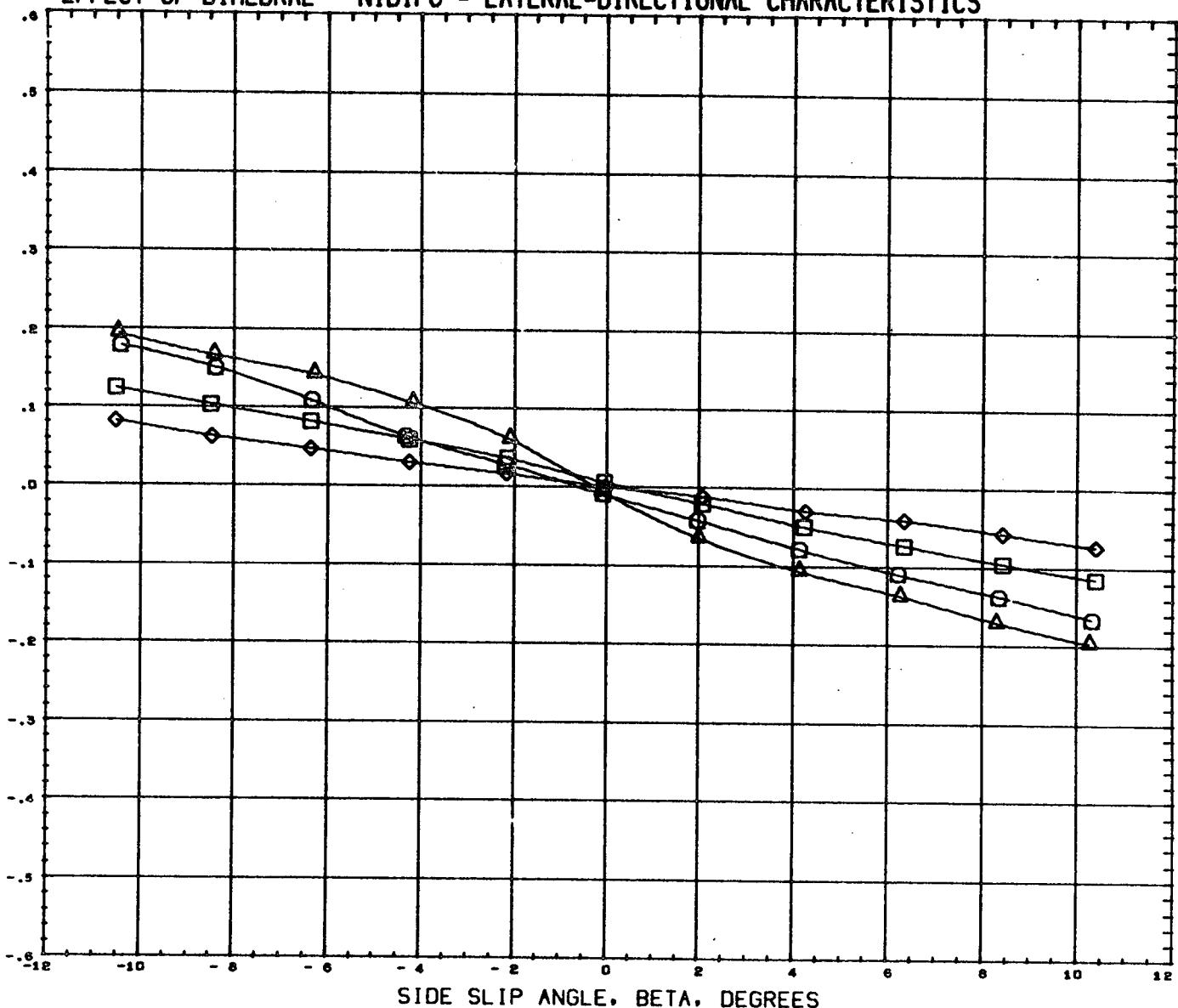
REFERENCE INFORMATION
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 LREF 7.2230 IN.
 BREF 7.2230 IN.
 XMMP 4.3340 IN.
 YMMP 0.0000 IN.
 ZMMP 0.0000 IN.
 SCALE 0.0034

MACH 0.901

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EFFECT OF DIHEDRAL - N1B1F6 - LATERAL-DIRECTIONAL CHARACTERISTICS

ROLLING MOMENT COEFFICIENT, CBL (BODY AXIS)



SIDE SLIP ANGLE, BETA, DEGREES

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(MS4010)		MSFC 518	MSFC PRESSURE FED BOOSTER	N1B1F6
(MS4023)		MSFC 518	MSFC PRESSURE FED BOOSTER	N1B1F6
(MS4000)		MSFC 518	MSFC PRESSURE FED BOOSTER	N1B1F6
(MS4024)		MSFC 518	MSFC PRESSURE FED BOOSTER	N1B1F6

ALPHA DIHDRL

30,000	30,000
30,000	45,000
50,000	30,000
50,000	45,000

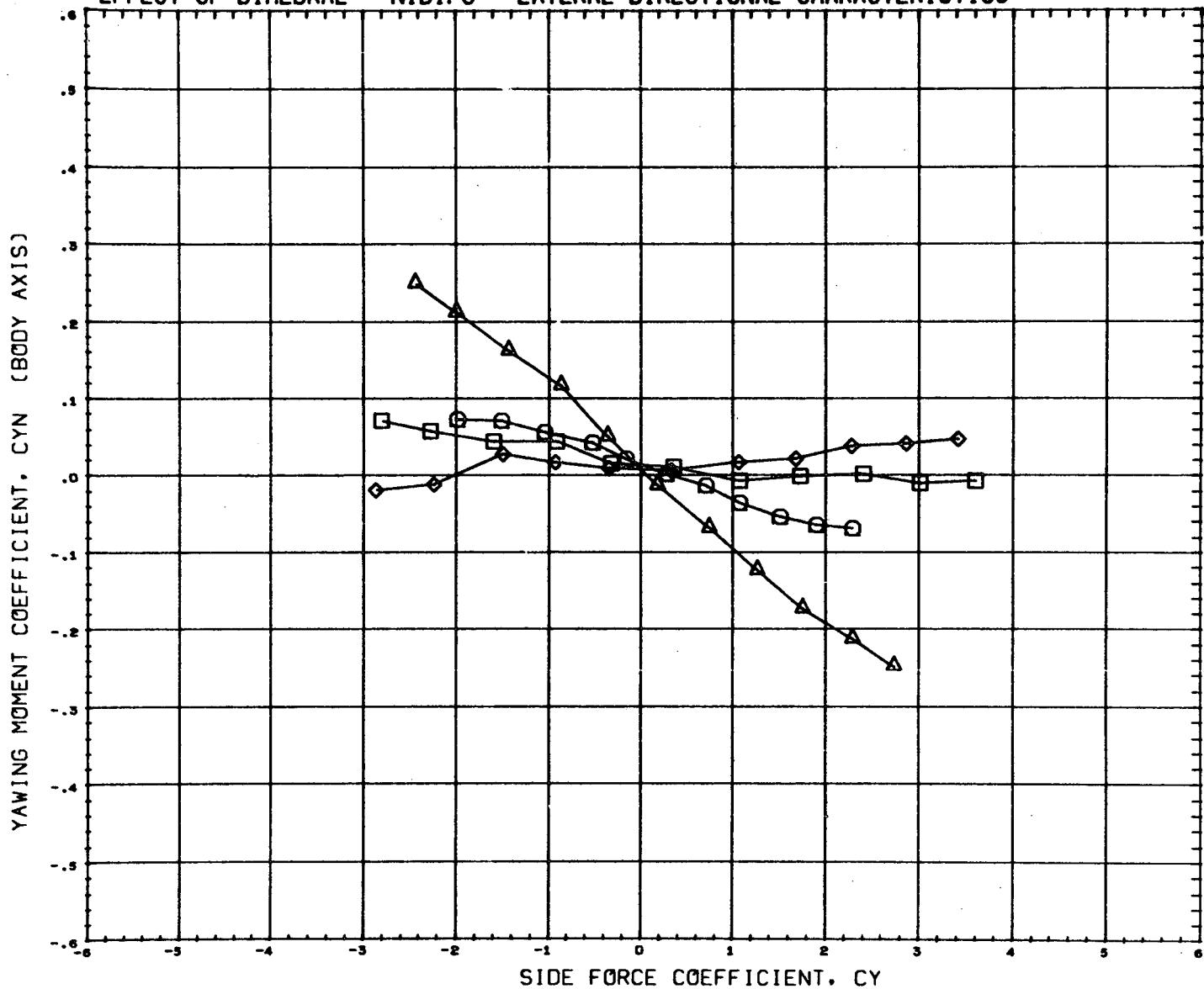
REFERENCE INFORMATION

SREF	0.9330	SG. IN.
LREF	7.2230	IN.
BREF	7.2230	IN.
XMRP	4.3340	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

MACH 1.201

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EFFECT OF DIHEDRAL - N1B1F6 - LATERAL-DIRECTIONAL CHARACTERISTICS



DATA SET SYMBOL CONFIGURATION DESCRIPTION

(SS4010) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6
 (MS4023) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6
 (MS4009) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6
 (MS4024) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6

ALPHA DIHDRL

30.000 30.000
 30.000 45.000
 50.000 30.000
 50.000 45.000

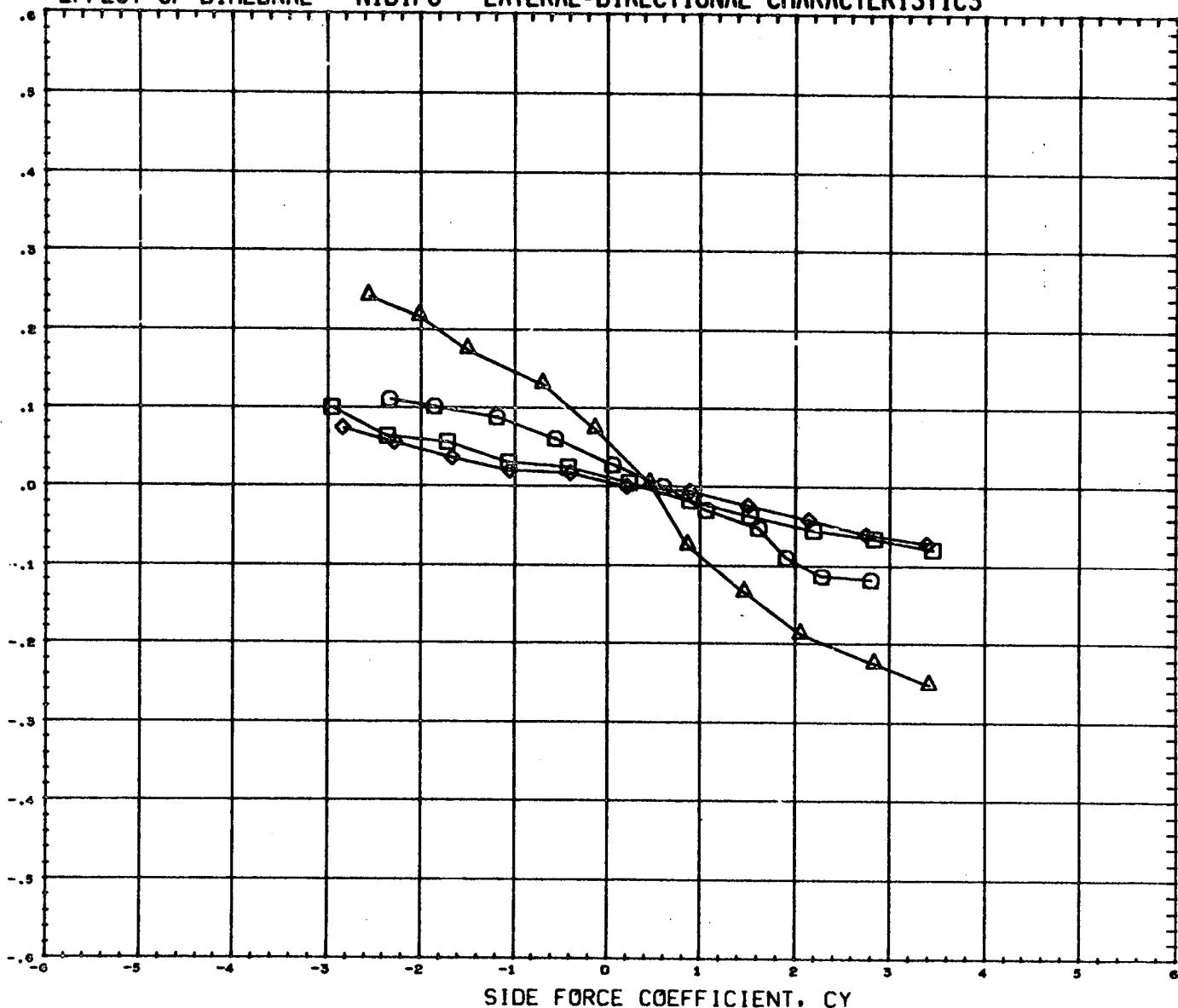
REFERENCE INFORMATION

SREF 0.9330 SQ.IN.
 LREF 7.2230 IN.
 BREF 7.2230 IN.
 XNRP 4.3340 IN.
 YNRP 0.0000 IN.
 ZNRP 0.0000 IN.
 SCALE 0.0034

MACH 0.901

EFFECT OF DIHEDRAL - N1B1F6 - LATERAL-DIRECTIONAL CHARACTERISTICS

YAWING MOMENT COEFFICIENT, CYN (BODY AXIS)



DATA SET SYMBOL CONFIGURATION DESCRIPTION

(S54010) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6
 (M54023) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6
 (S54009) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6
 (M54024) MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6

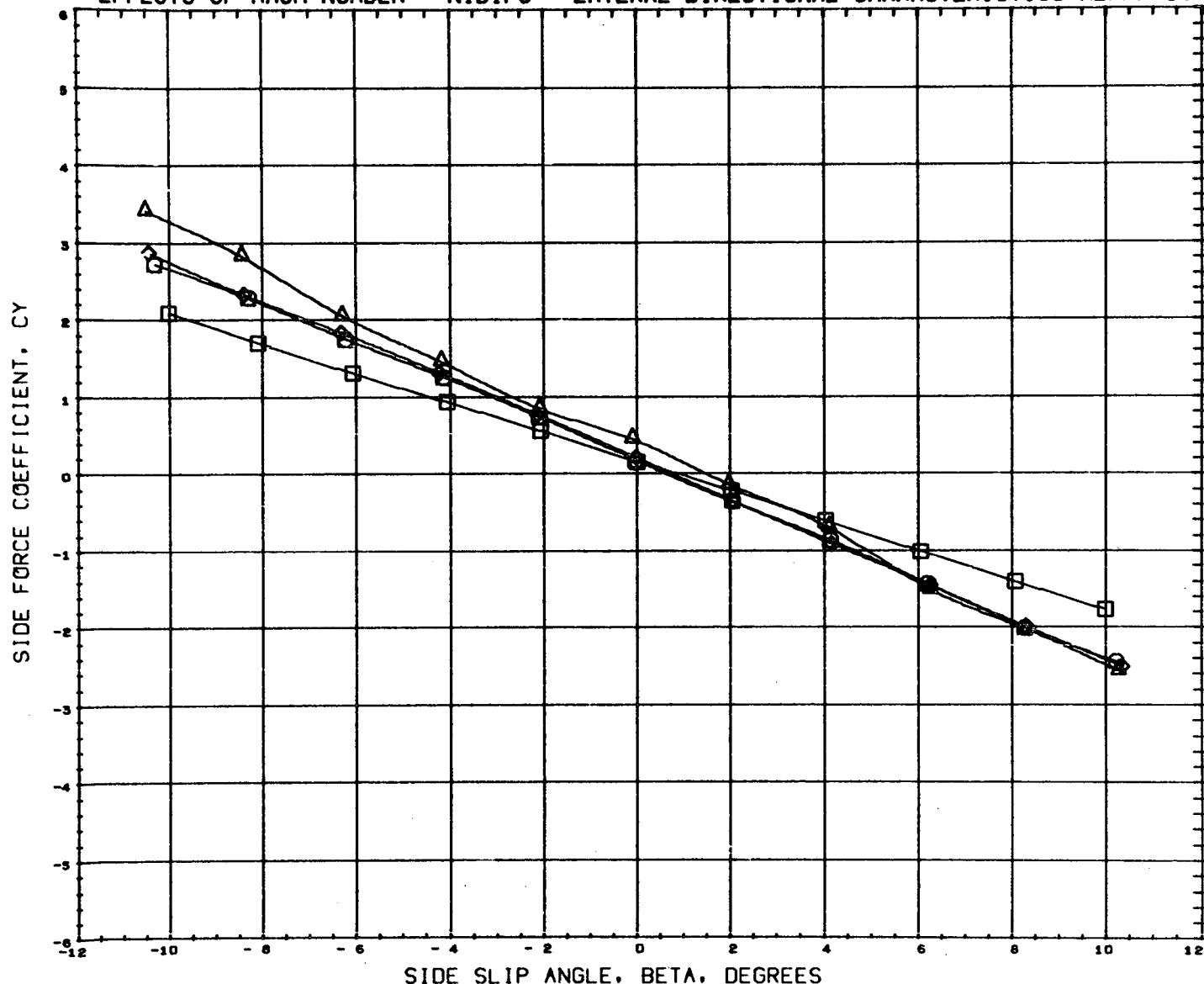
ALPHA DIHDL
 30.000 30.000
 30.000 45.000
 50.000 30.000
 50.000 45.000

REFERENCE INFORMATION
 SREF 0.9330 SQ.IN.
 LREF 7.2230 IN.
 BREF 7.2230 IN.
 XMRP 4.3340 IN.
 YMRP 0.0000 IN.
 ZMRP 0.0000 IN.
 SCALE 0.0034

MACH 1.201

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EFFECTS OF MACH NUMBER - N1B1F6 - LATERAL-DIRECTIONAL CHARACTERISTICS-ALPHA=30



SYMBOL	MACH	PARAMETRIC VALUES		
		ALPHA	30.000	DIHDRLL
○	0.903			
△	1.199			
◊	1.961			
□	4.959			

REFERENCE INFORMATION		
REF	0.9330	SQ.IN.
REF	7.2230	IN.
REF	7.2230	IN.
MRP	4.3340	IN.
MRP	0.0000	IN.
MRP	0.0000	IN.
CALE	0.0034	

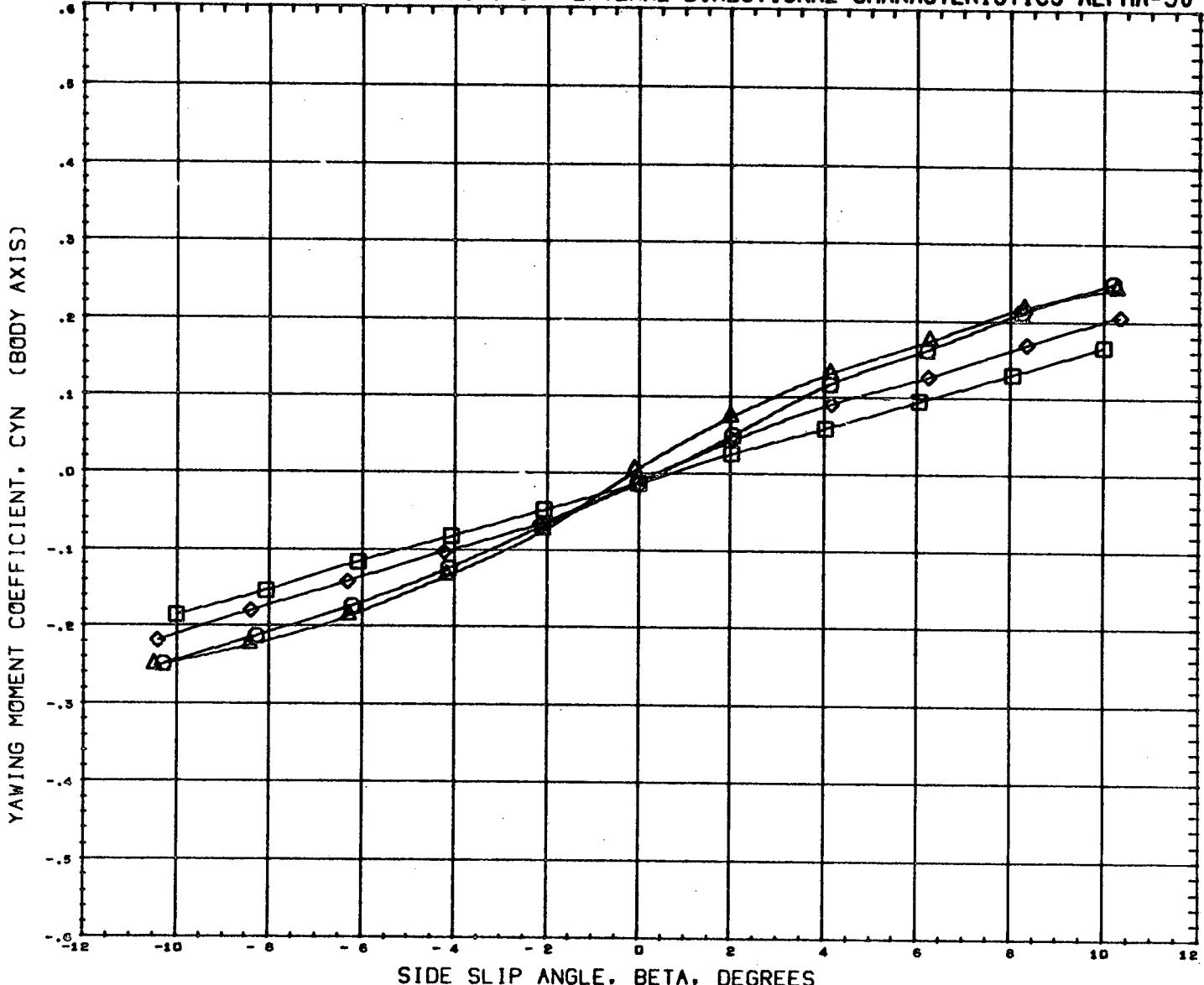
DATA MIST. CODE S

MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6

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EFFECTS OF MACH NUMBER - N1B1F6 - LATERAL-DIRECTIONAL CHARACTERISTICS-ALPHA=30



SYMBOL	MACH	PARAMETRIC VALUES		
		ALPHA	30.000	DIHDLR
○	0.903			
△	1.199			
◊	1.961			
□	4.959			

DATA HIST. CODE 8

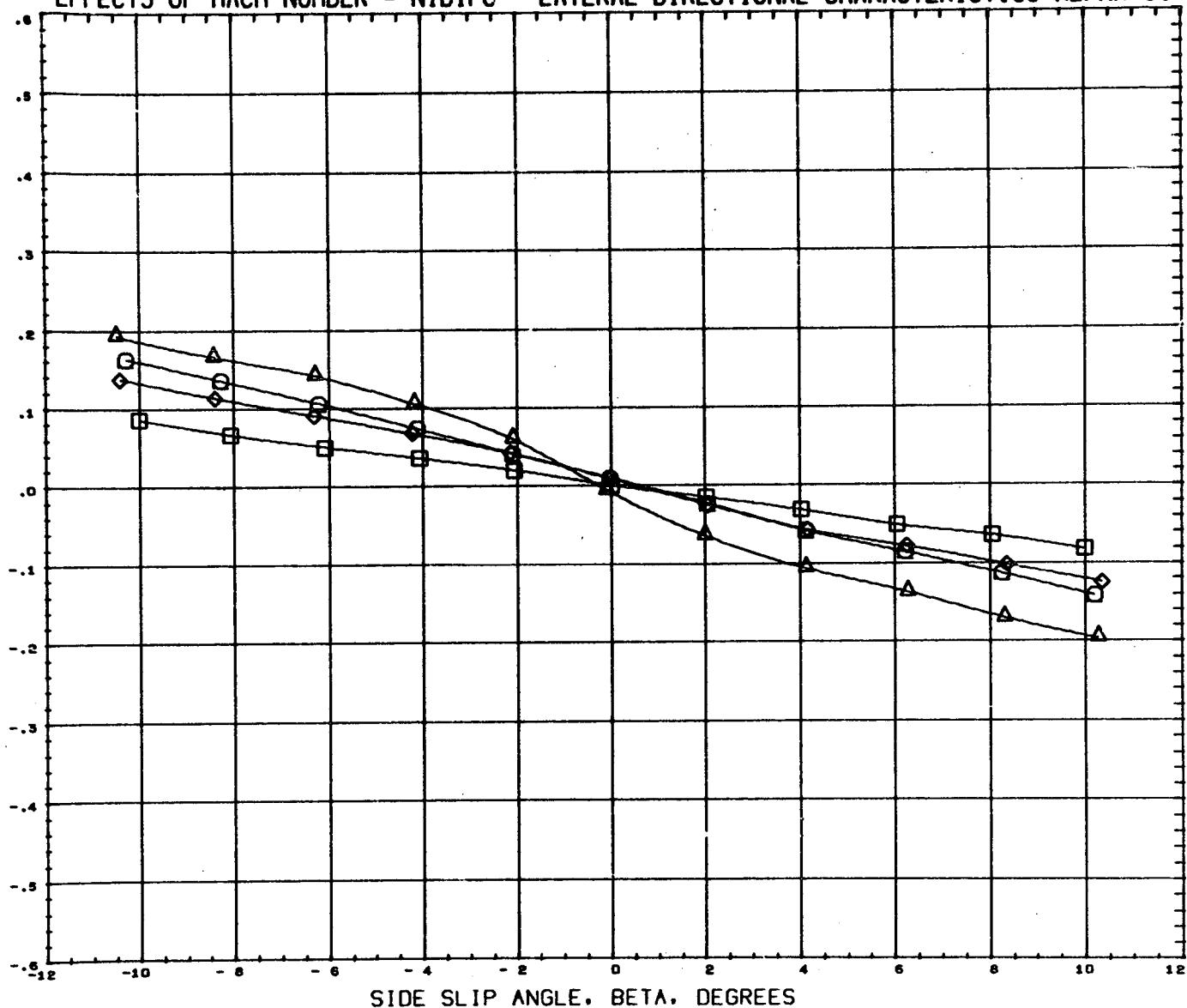
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REF	7.2230	IN.
MRP	4.3340	IN.
MRP	0.0000	IN.
MRP	0.0000	IN.
CALE	0.0034	

MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6

(S54023) 22 DEC 71

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EFFECTS OF MACH NUMBER - N1B1F6 - LATERAL-DIRECTIONAL CHARACTERISTICS-ALPHA=30



SYMBOL	MACH	PARAMETRIC VALUES		
		ALPHA	30.000	DHDRL
○	0.903			
△	1.199			
◊	1.961			
□	4.959			

DATA MIST. CODE S

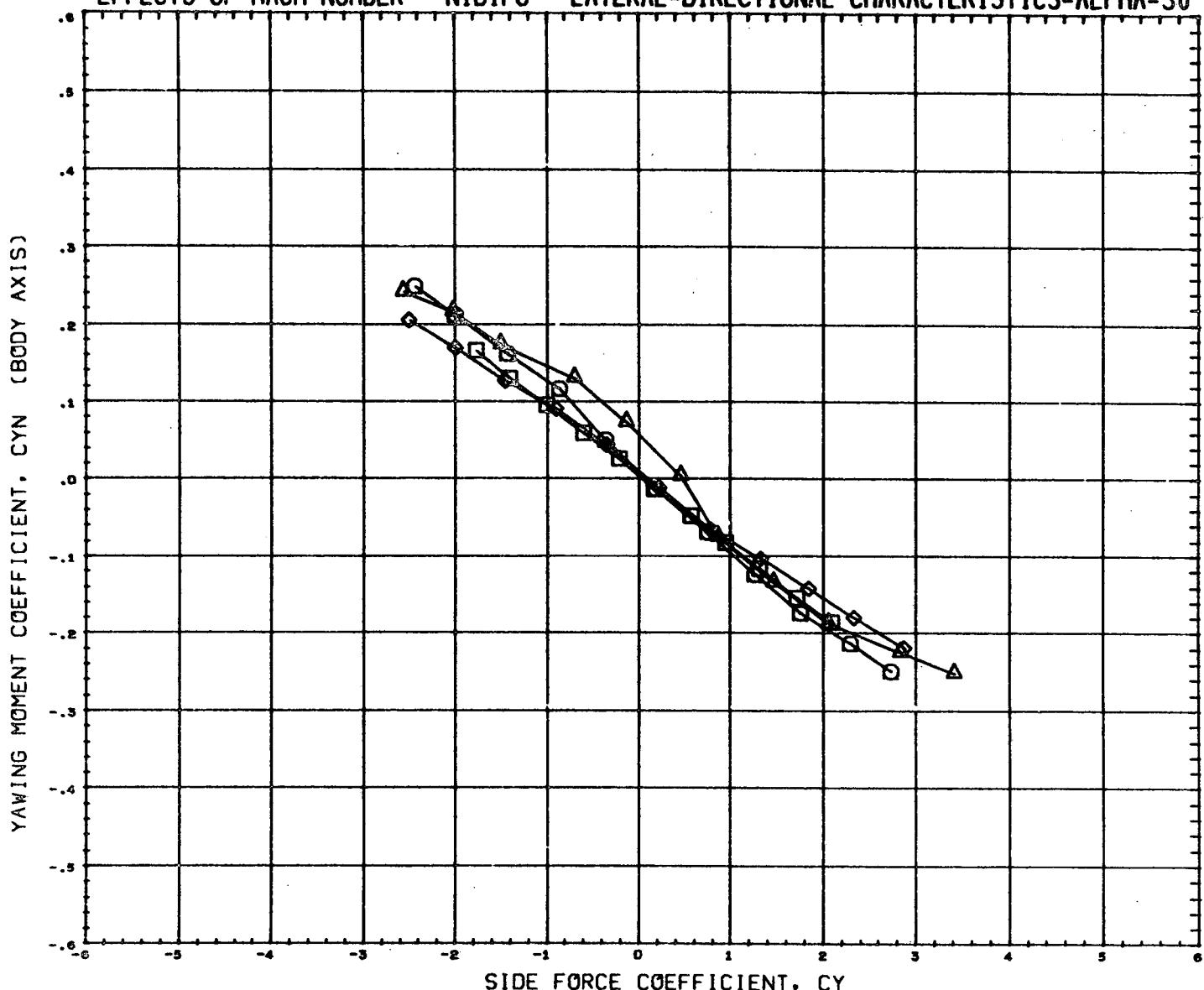
REFERENCE INFORMATION		
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LREF	7.2230	IN.
BREF	7.2230	IN.
XMRP	4.3340	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6

(S54023) 22 DEC 71

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EFFECTS OF MACH NUMBER - N1B1F6 - LATERAL-DIRECTIONAL CHARACTERISTICS-ALPHA=30



SYMBOL	MACH	PARAMETRIC VALUES		
○	0.905	ALPHA	30.000	DIMHDL
△	1.199			
◊	1.961			
□	4.959			

DATA MIST. CODE 8

REFERENCE INFORMATION		
BREF	0.9330	SQ.IN.
LREF	7.2230	IN.
MREF	7.2230	IN.
ZMRP	4.3340	IN.
LMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

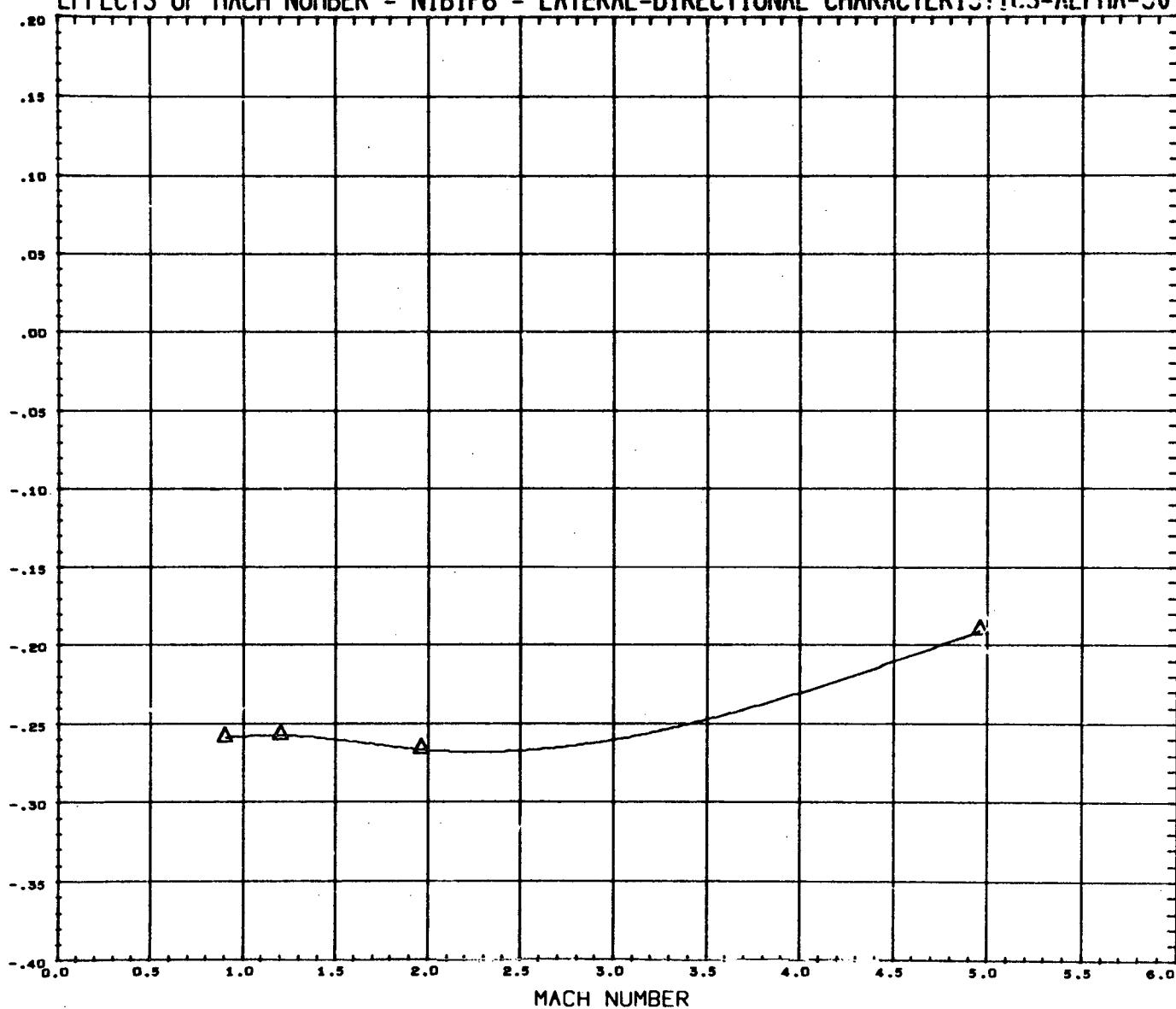
MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6

(S54023) 22 DEC 71

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EFFECTS OF MACH NUMBER - N1B1F6 - LATERAL-DIRECTIONAL CHARACTERISTICS- $\text{ALPHA}=30$

SIDE FORCE DERIVATIVE WITH BETA. $D(C_Y)/DB.$ PER DEGREE



PARAMETRIC VALUES
ALPHA 30.000 DIHDR 45.000

REFERENCE INFORMATION
SREF 0.9330 SQ.IN.
LREF 7.2230 IN.
BREF 7.2230 IN.
XMRP 4.3340 IN.
YMRP 0.0000 IN.
ZMRP 0.0000 IN.
SCALE 0.0034

DATA HIST. CODE S

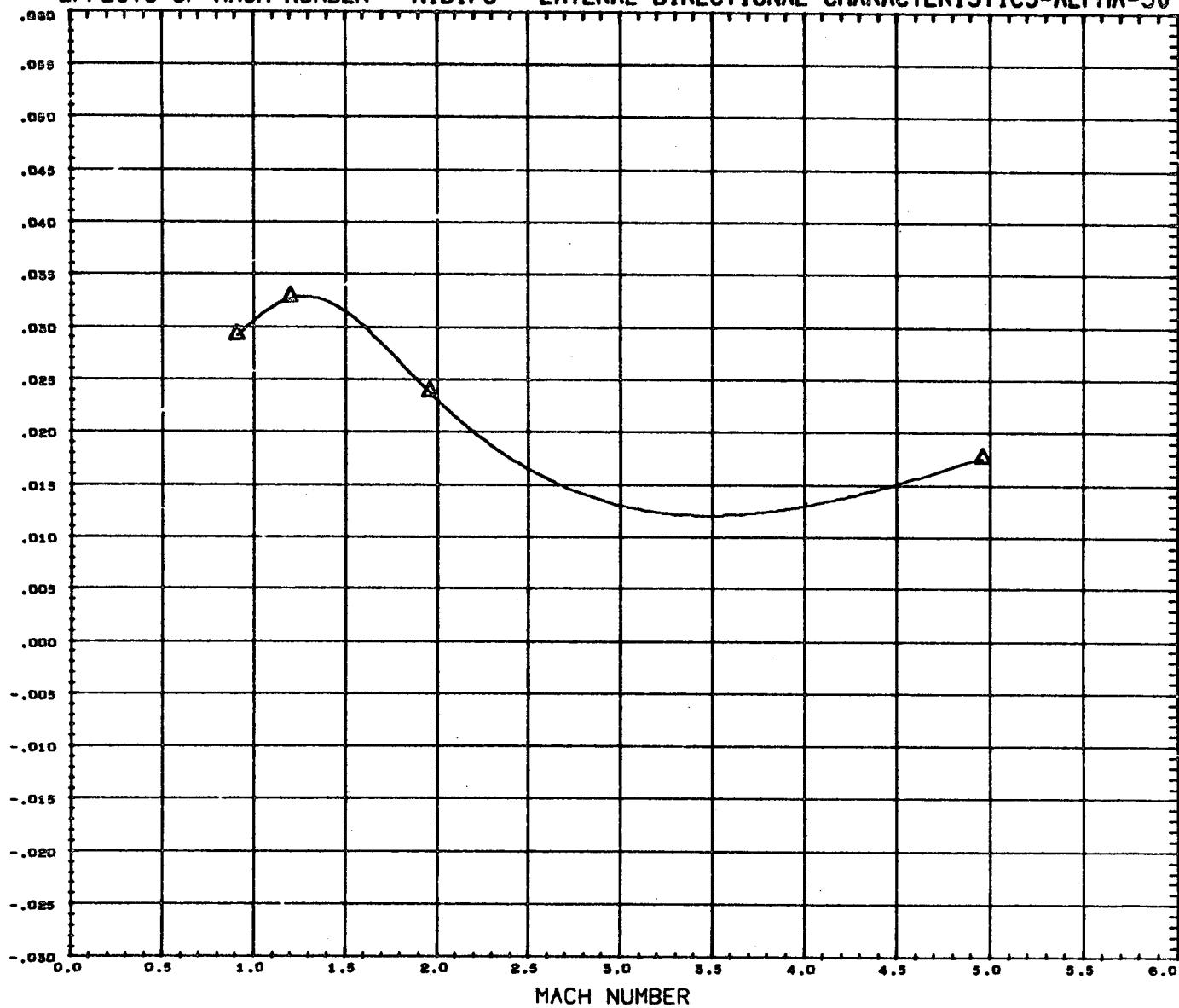
MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6

(S54023) 22 DEC 71

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YAWING MOMENT DERIVATIVE WITH BETA, D(CYN)/DB, PER DEGREE (BODY AXIS)

EFFECTS OF MACH NUMBER - N1B1F6 - LATERAL-DIRECTIONAL CHARACTERISTICS-ALPHA=30



PARAMETRIC VALUES
ALPHA 30.000 DIMDR 45.000

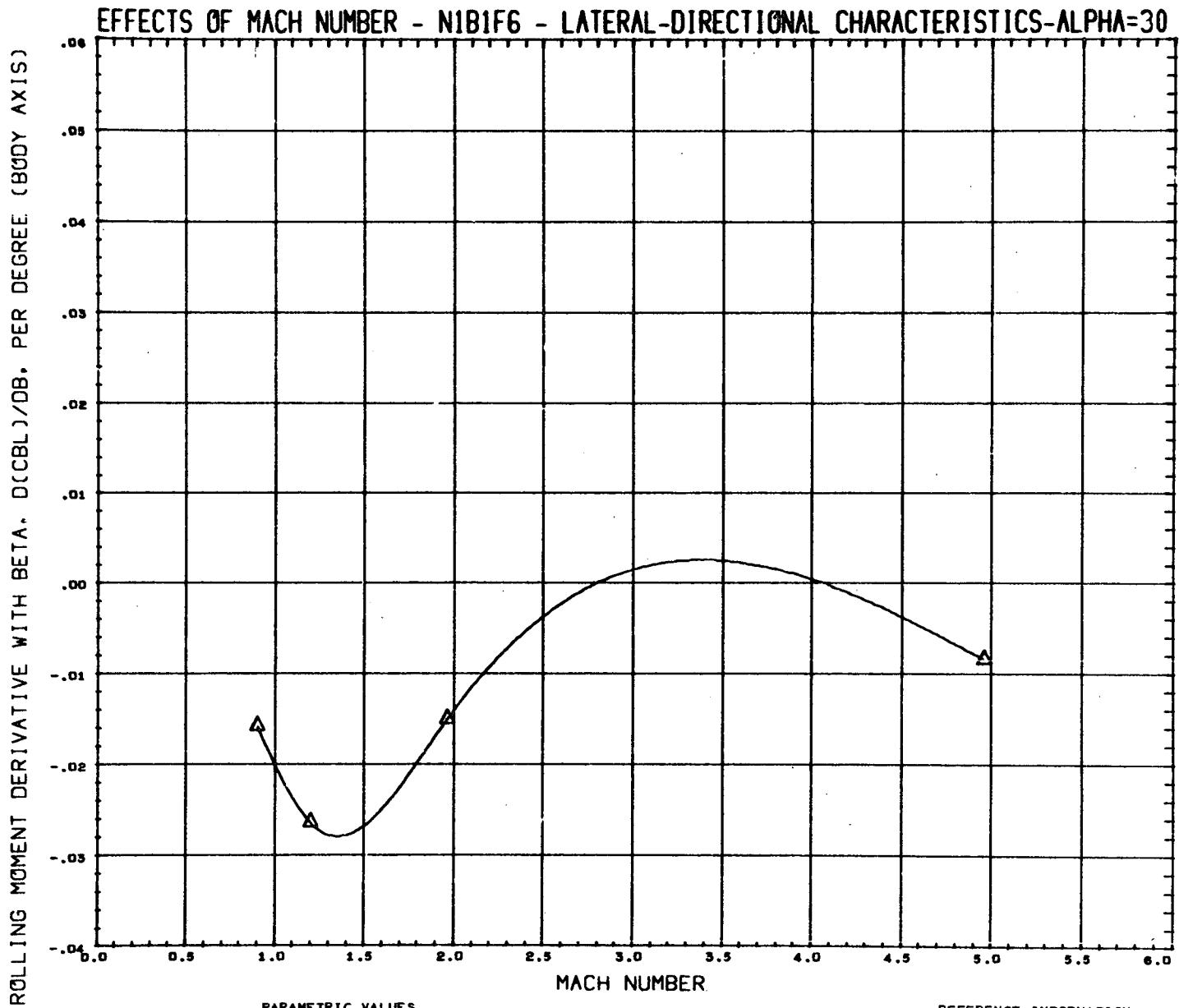
DATA HIST. CODE 8

MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6

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REFERENCE INFORMATION
SREF D.9330 SQ.IN.
LREF 7.2230 IN.
BREF 7.2230 IN.
XMRP 4.3340 IN.
YMRP 0.0000 IN.
ZMRP 0.0000 IN.
SCALE 0.0034



PARAMETRIC VALUES
 ALPHA 30.000 DIHDR 45.000

REFERENCE INFORMATION
 SREF 0.9330 SQ. IN.
 LREF 7.2230 IN.
 BREF 7.2230 IN.
 XMRF 4.3340 IN.
 YMRF 0.0000 IN.
 ZMRF 0.0000 IN.
 SCALE 0.0034

DATA HIST. CODE S

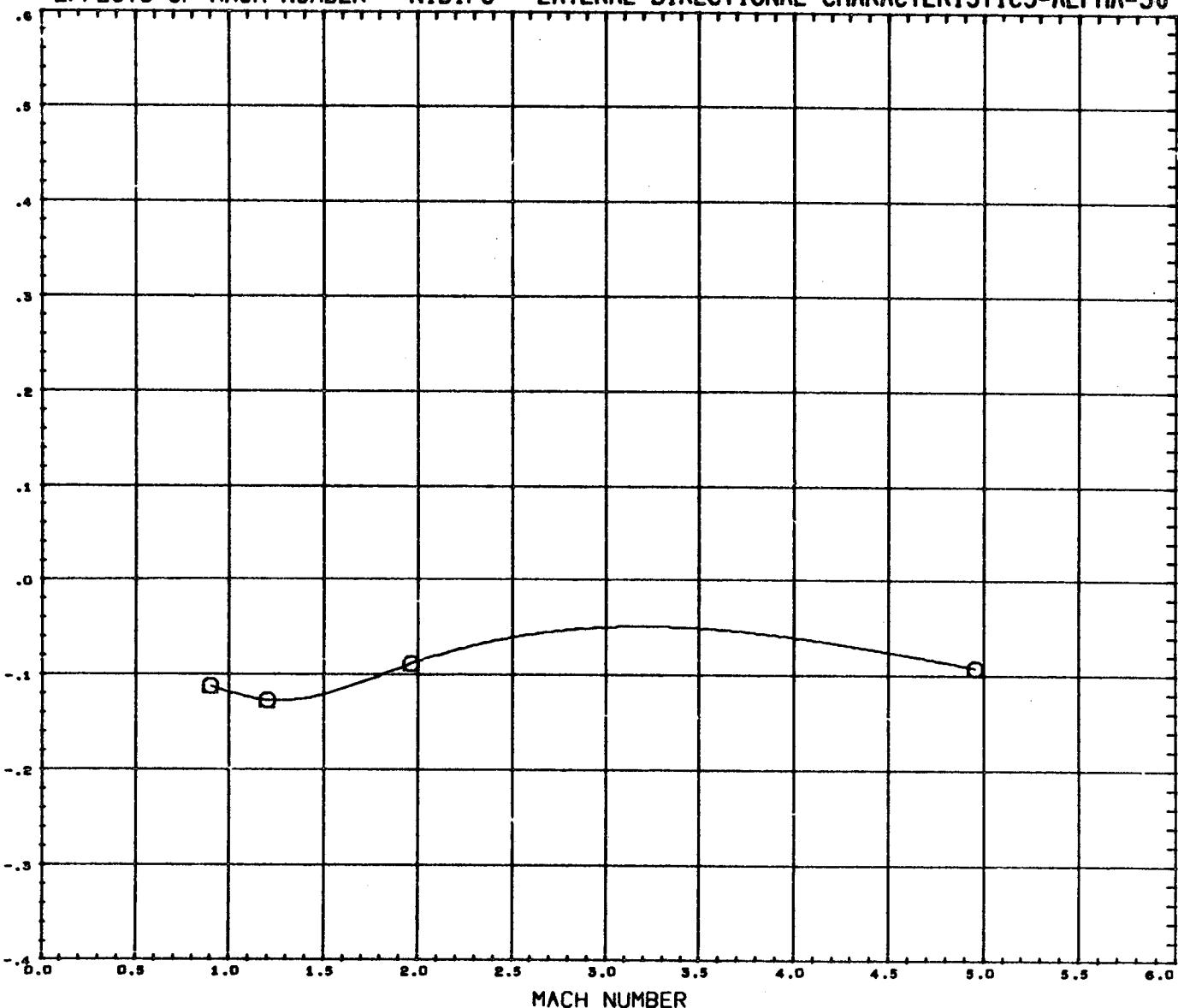
MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6

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EFFECTS OF MACH NUMBER - N1B1F6 - LATERAL-DIRECTIONAL CHARACTERISTICS-ALPHA=30

LOCAL CENTER OF PRESSURE, YAC = CYN/CY

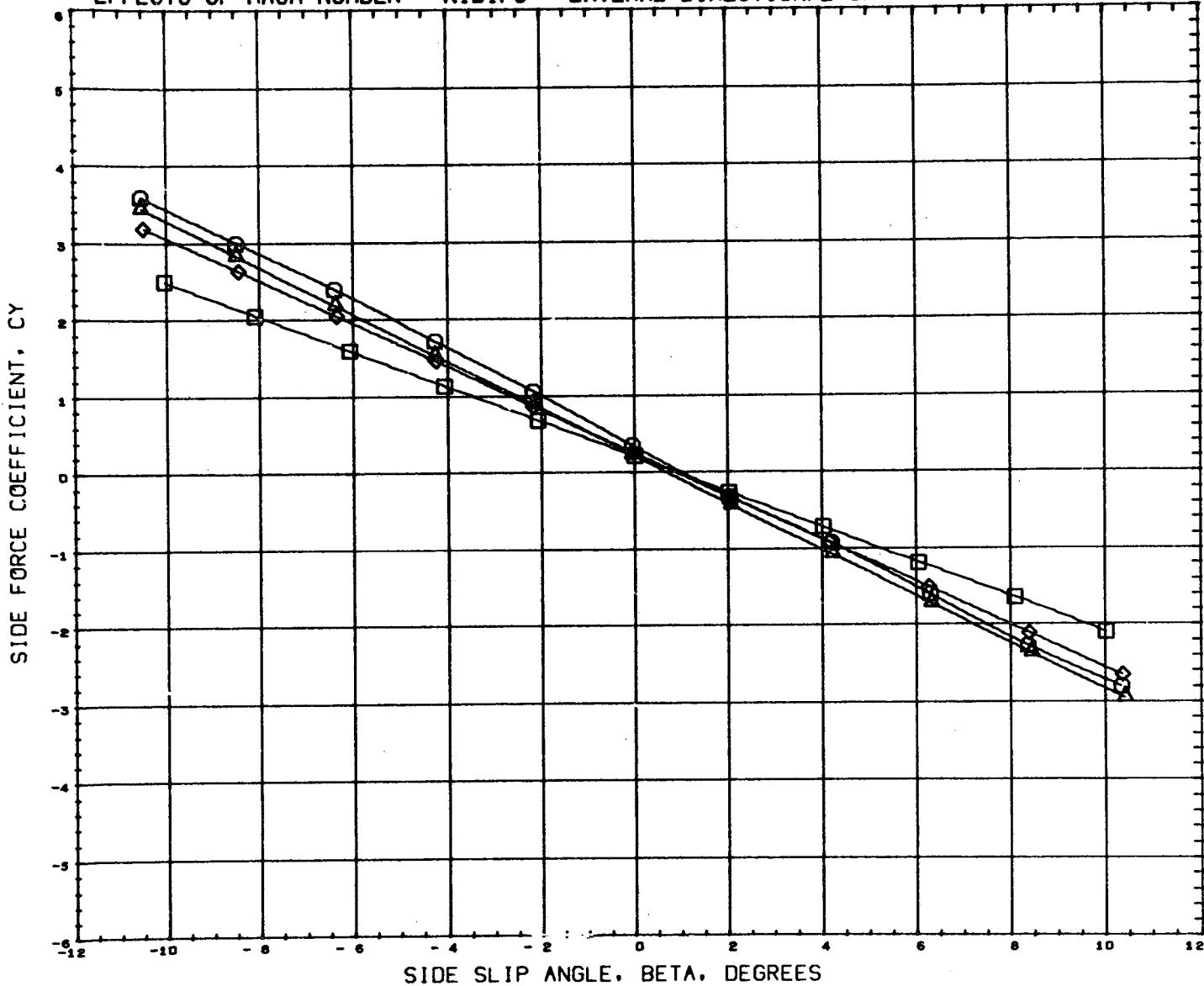


SYMBOL BETA PARAMETRIC VALUES
□ 0.000 ALPHA 30.000 DIHDRL 45.000

DATA MIST. CODE SCI

REFERENCE INFORMATION
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 LREF 7.2230 IN.
 BREF 7.2230 IN.
 XMRP 4.3340 IN.
 YMNP 0.0000 IN.
 ZMRP 0.0000 IN.
 SCALE 0.0034

EFFECTS OF MACH NUMBER - N1B1F6 - LATERAL-DIRECTIONAL CHARACTERISTICS-ALPHA=50



SYMBOL	MACH	PARAMETRIC VALUES		
		ALPHA	50.000	DIHDRLL
○	0.902			45.000
△	1.199			
◊	1.960			
□	4.959			

DATA MIST. CODE S

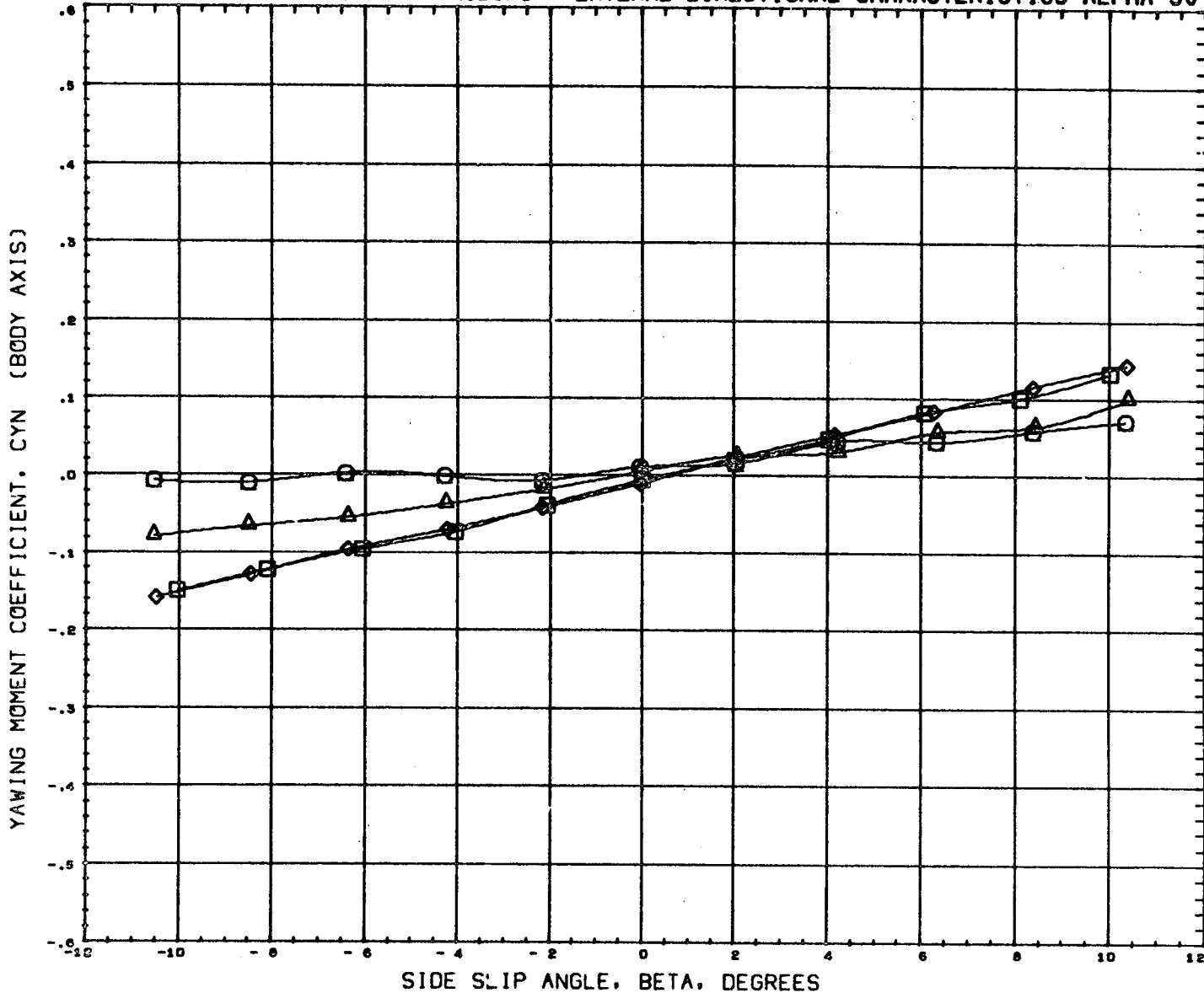
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REF	7.2230	IN.
REF	7.2230	IN.
MRP	4.3340	IN.
MRP	0.0000	IN.
MRP	0.0000	IN.
CALE	0.0034	

MSFC 518 MSFC PRESSURE FED BOOSTER N181F6

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EFFECTS OF MACH NUMBER - N1B1F6 - LATERAL-DIRECTIONAL CHARACTERISTICS-ALPHA=50



SYMBOL	MACH	PARAMETRIC VALUES
○	0.902	ALPHA 50,000 DIHDLR 45,000
△	1.199	
◊	1.960	
□	4.959	

DATA HIST. CODE 3

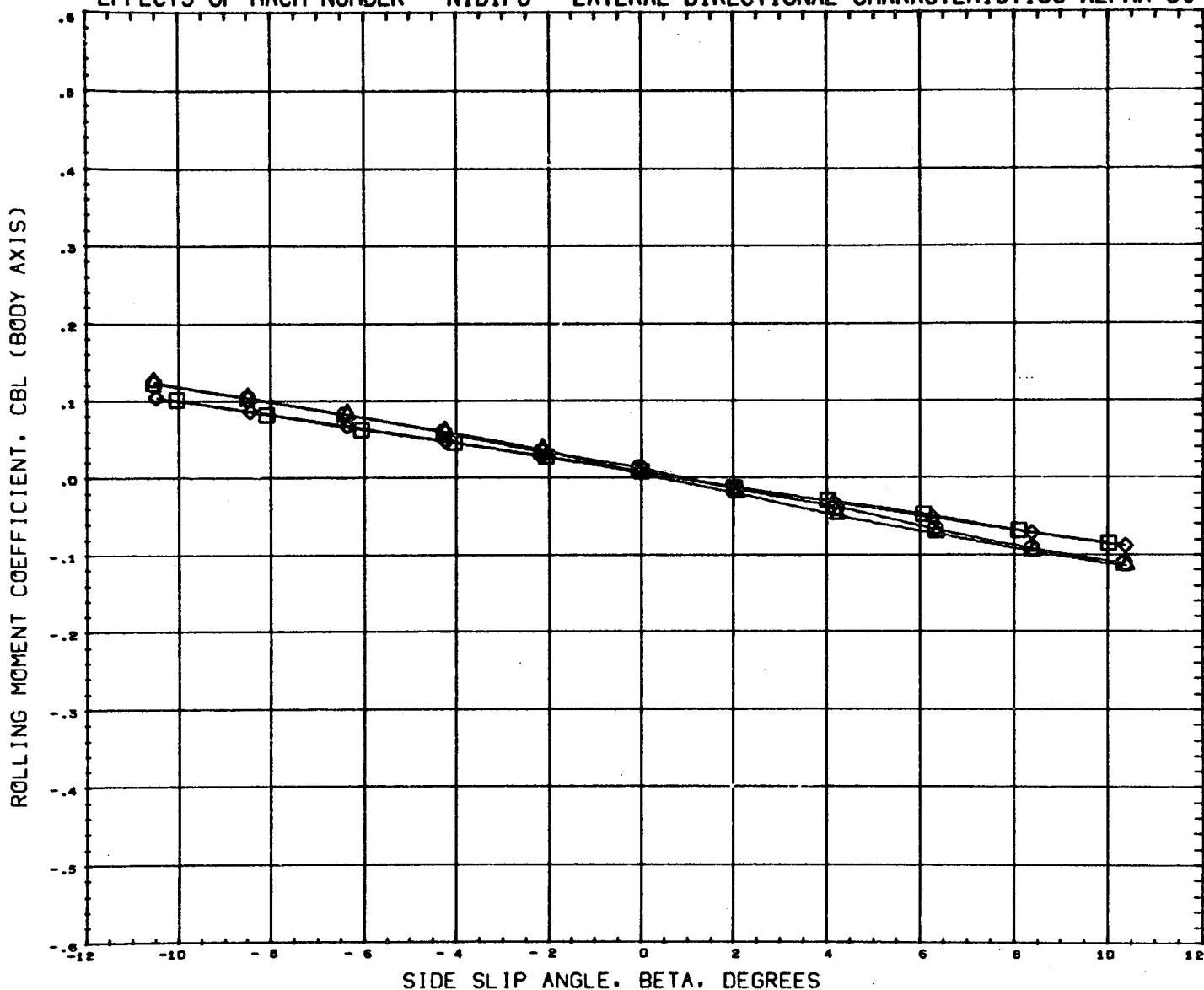
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LREF	7.2230	IN.
BREF	7.2230	IN.
XHPR	4.3540	IN.
YHPR	0.0000	IN.
ZHPR	0.0000	IN.
SCALE	0.0034	

MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6

(S54024) 22 DEC 71

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EFFECTS OF MACH NUMBER - N1B1F6 - LATERAL-DIRECTIONAL CHARACTERISTICS-ALPHA=50



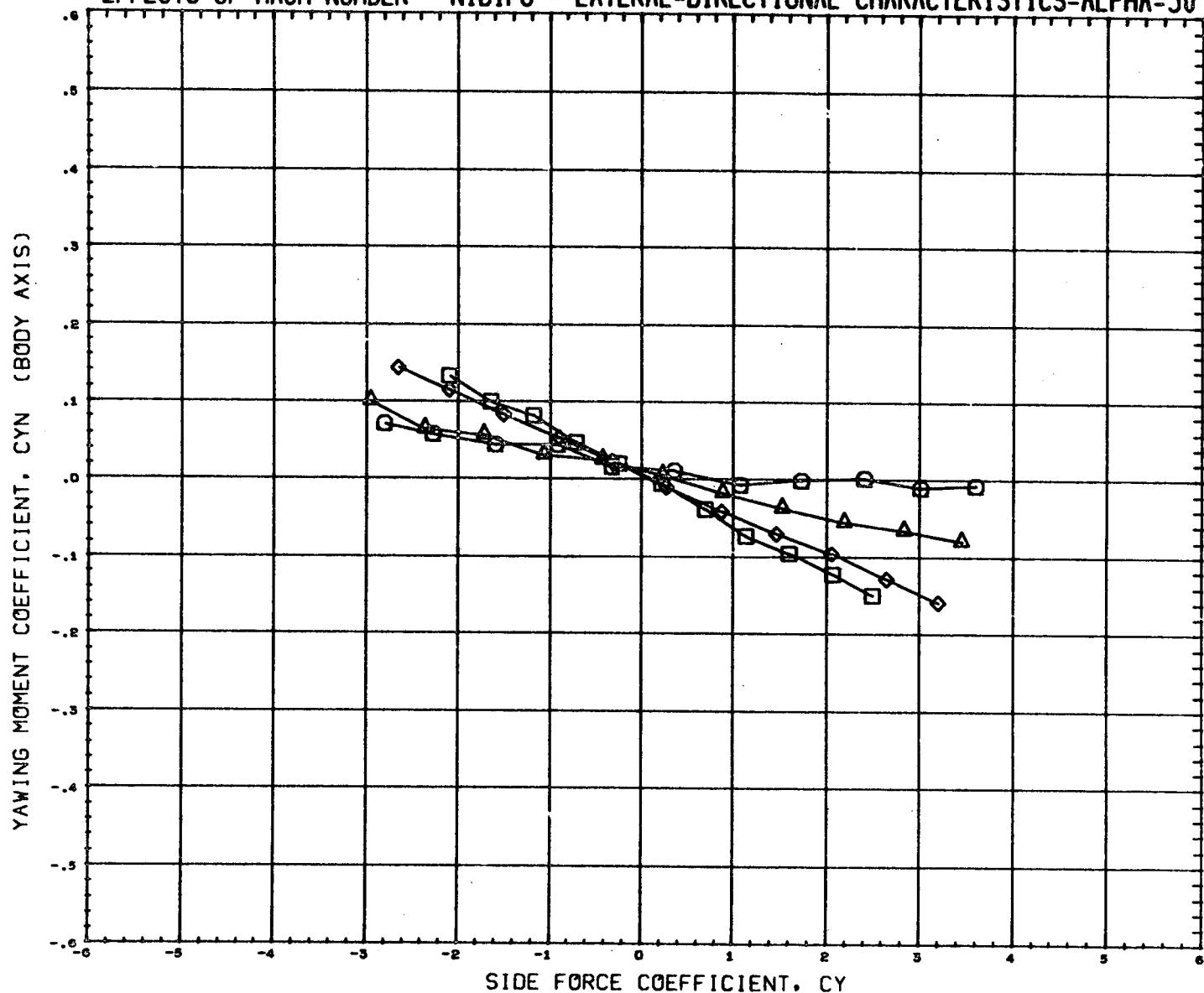
SYMBOL	MACH	PARAMETRIC VALUES		
		ALPHA	50.000	DIMDRL
○	0.902			
△	1.199			
◊	1.960			
□	4.959			

DATA HIST. CODE S

REFERENCE INFORMATION		
REF	0.9330	SQ.IN.
REF	7.2230	IN.
REF	7.2230	IN.
MRP	4.3340	IN.
MRP	0.0000	IN.
MRP	0.0000	IN.
CALE	0.0034	

MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6 (S54024) 22 DEC 71 PAGE 161

EFFECTS OF MACH NUMBER - N1B1F6 - LATERAL-DIRECTIONAL CHARACTERISTICS-ALPHA=50



SYMBOL	MACH	PARAMETRIC VALUES		
		ALPHA	50.000	DIMDRL
○	0.902			
△	1.199			
◊	1.960			
□	4.959			

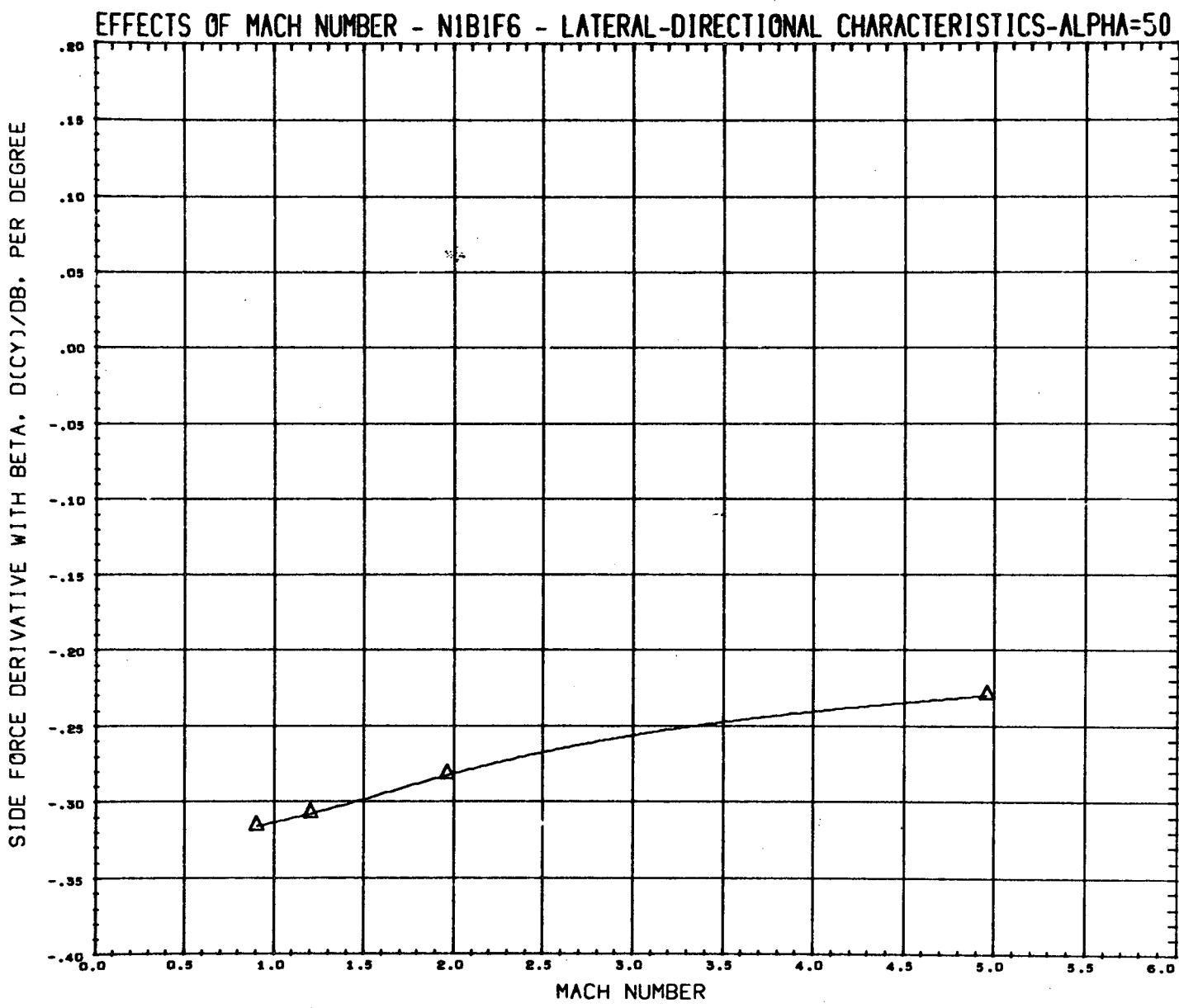
REFERENCE INFORMATION		
SREF	0.9330	SG. IN.
LREF	7.2230	IN.
BREF	7.2230	IN.
XMRP	4.3340	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

DATA HIST. CODE S

MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6

(S54024) 22 DEC 71

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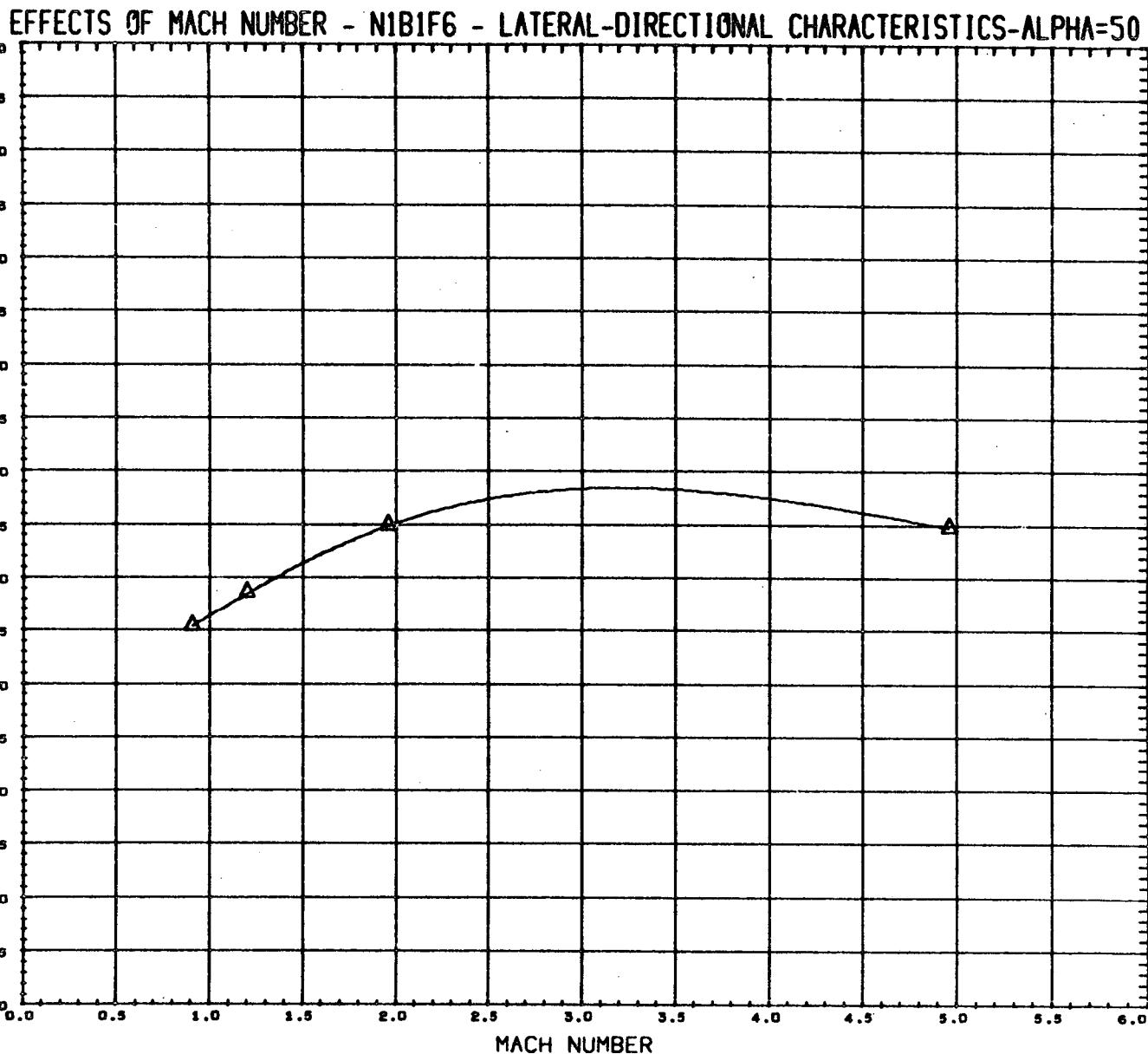


PARAMETRIC VALUES
 ALPHA 50.000 DIHDRL 45.000

DATA MIST. CODE S

REFERENCE INFORMATION
 SREF 0.9330 SG. IN.
 LREF 7.2230 IN.
 BREF 7.2230 IN.
 XMRP 4.3340 IN.
 YMRP 0.0000 IN.
 ZMRP 0.0000 IN.
 SCALE 0.0034

YAWING MOMENT DERIVATIVE WITH BETA. D(CYN)/DB. PER DEGREE (BODY AXIS)

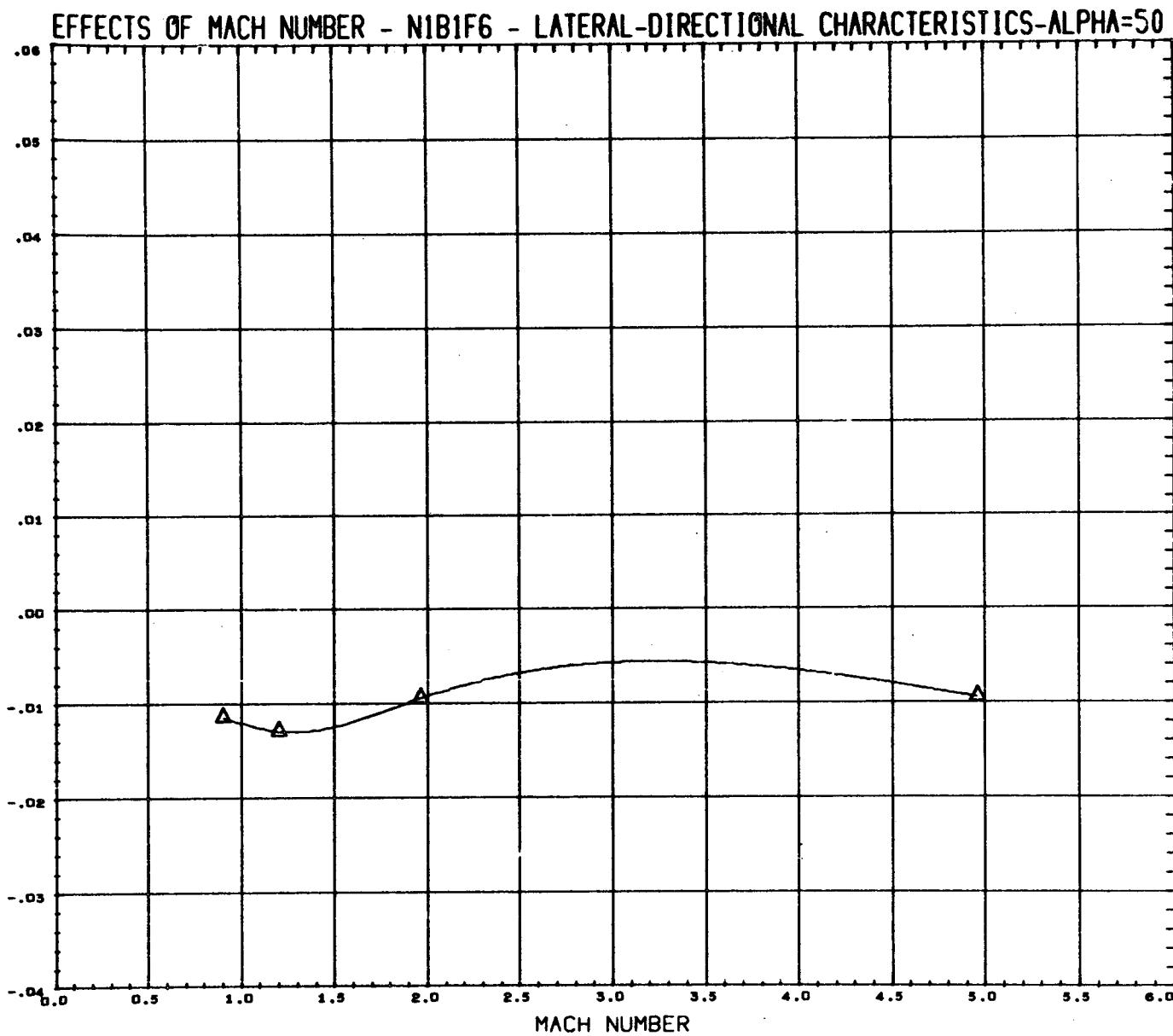


PARAMETRIC VALUES
ALPHA 50.000 DIHDRL 45.000

DATA HIST. CODE 8

REFERENCE INFORMATION
SREF 0.9330 SQ.IN.
LREF 7.2230 IN.
BREF 7.2230 IN.
XMRP 4.3340 IN.
YMRP 0.0000 IN.
ZMRP 0.0000 IN.
SCALE 0.0034

ROLLING MOMENT DERIVATIVE WITH BETA, D(CBL)/DB, PER DEGREE (BODY AXIS)



PARAMETRIC VALUES
ALPHA 50.000 DIHDRL 45.000

REFERENCE INFORMATION
SREF 0.9330 56. IN.
LREF 7.2230 IN.
BREF 7.2230 IN.
XMRP 4.3340 IN.
YMRP 0.0000 IN.
ZMRP 0.0000 IN.
SCALE 0.0034

DATA MIST. CODE S

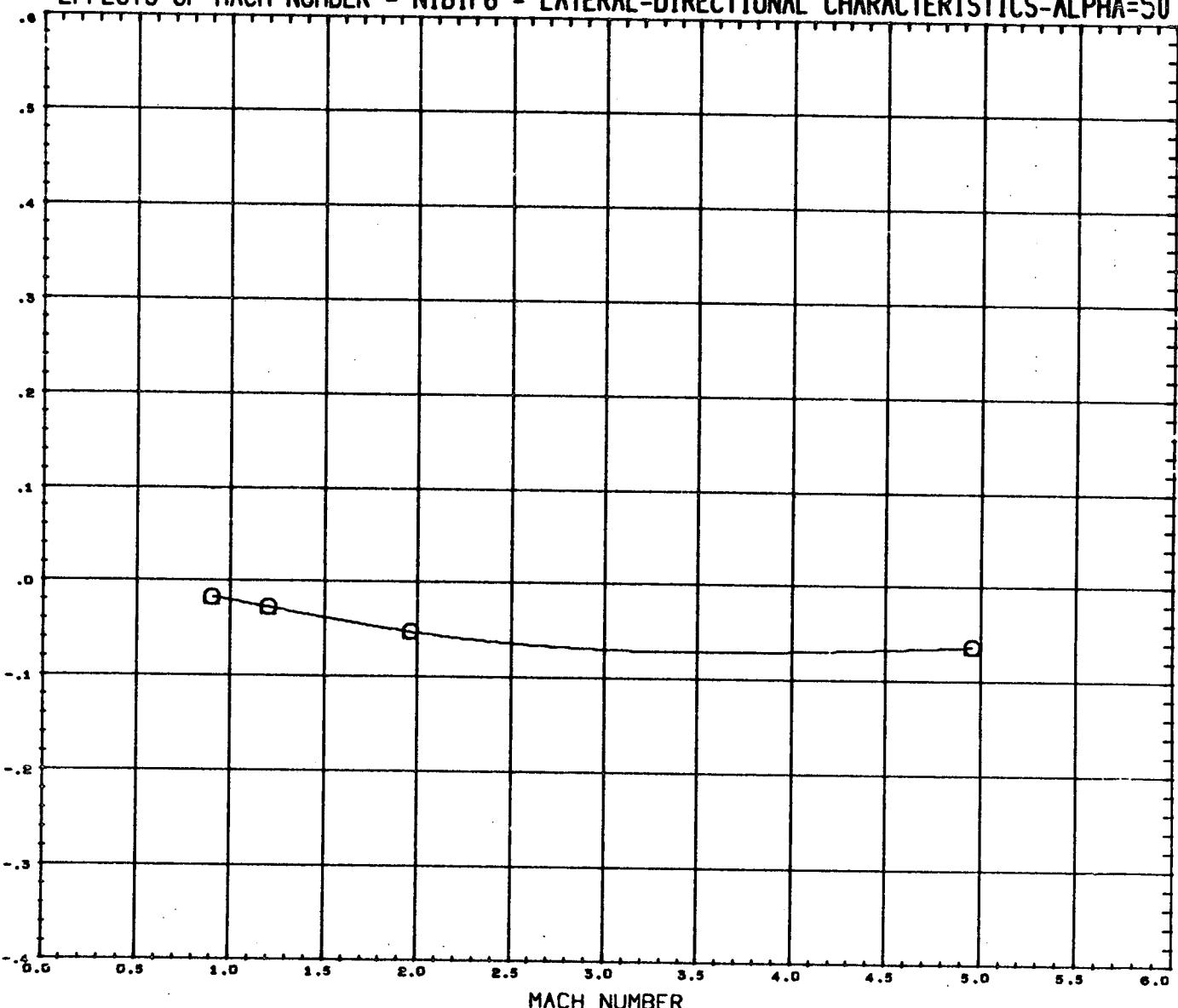
MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6

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EFFECTS OF MACH NUMBER - N1B1F6 - LATERAL-DIRECTIONAL CHARACTERISTICS-ALPHA=50

LOCAL CENTER OF PRESSURE, YAC = CYN/CY

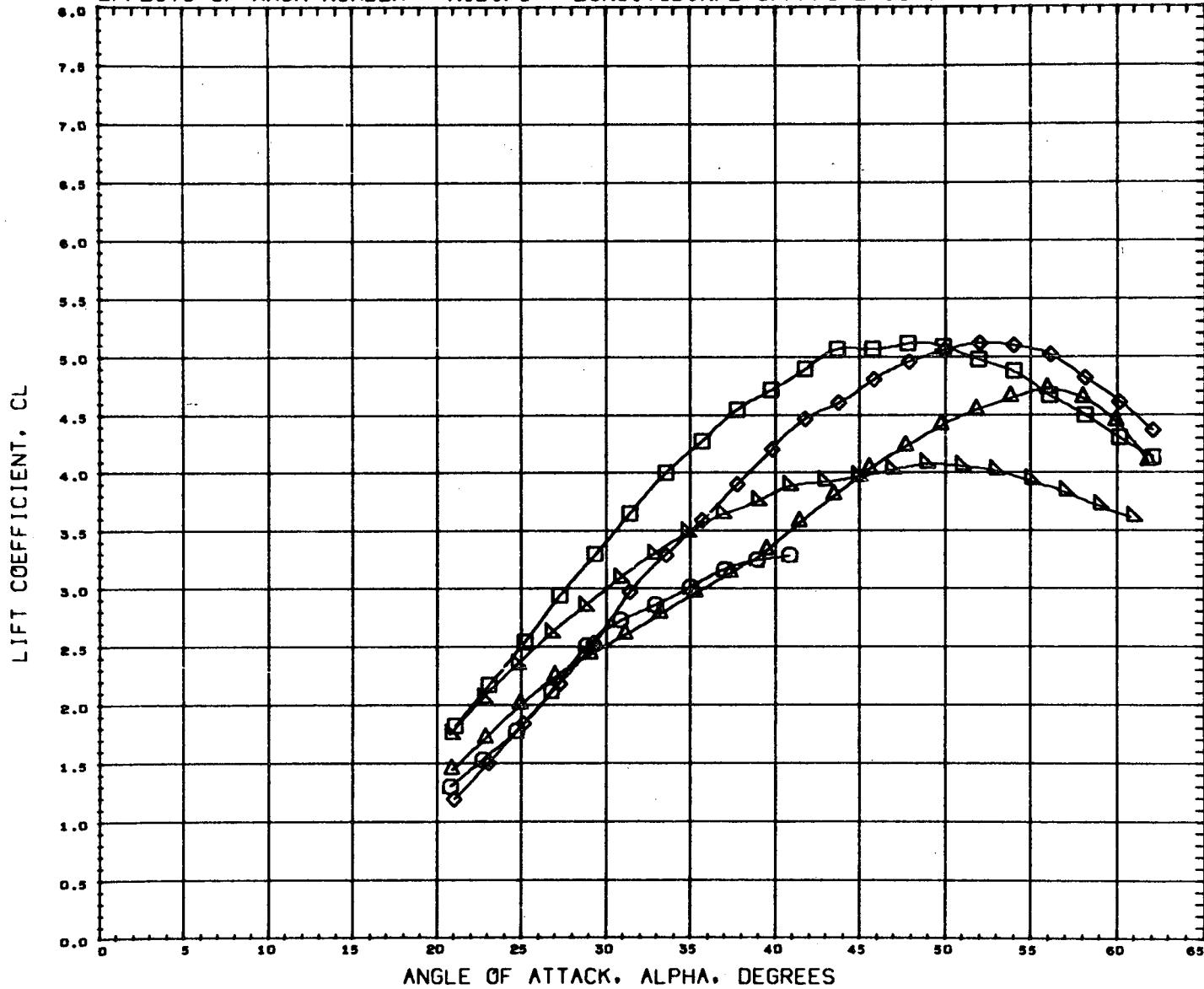


SYMBOL BETA PARAMETRIC VALUES
 O 0.000 ALPHA 50.000 DIHDRL 45.000

DATA MIST. CODE SCI

REFERENCE INFORMATION
 SREF 0.9350 SQ.IN.
 LREF 7.2230 IN.
 BREF 7.2230 IN.
 XNRP 4.3340 IN.
 YNRP 0.0000 IN.
 ZNRP 0.0000 IN.
 SCALE 0.0034

EFFECTS OF MACH NUMBER - N1B1F6 - LONGITUDINAL CHARACTERISTICS



SYMBOL	MACH	PARAMETRIC VALUES		
		BETA	0.000	DIHDRLL
O	0.599			45.000
△	0.900			
◊	1.197			
□	1.961			
▽	4.959			
		DATA MIST. CODE	STV*E*G	

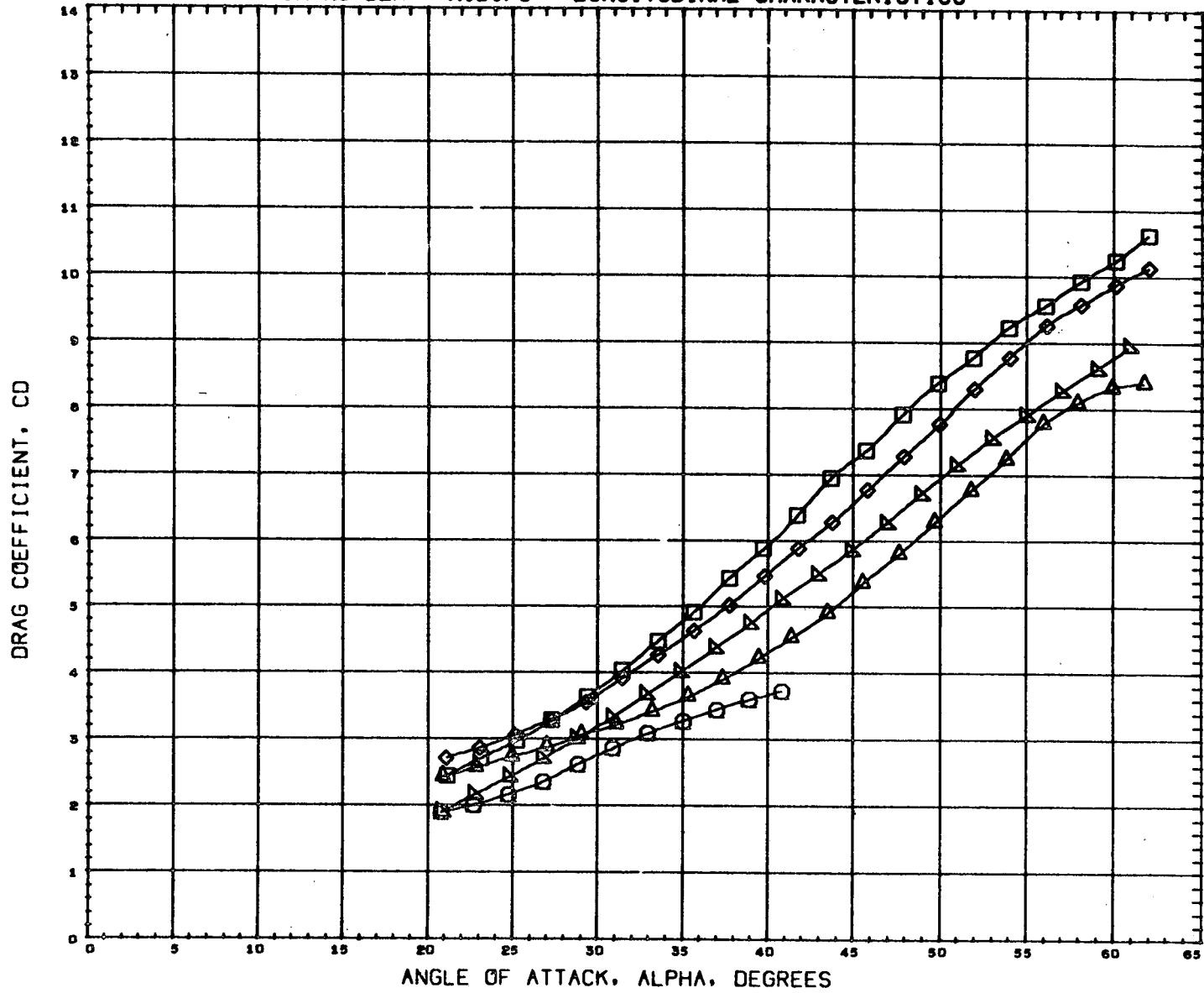
REFERENCE INFORMATION		
REF	0.9330	SQ.IN.
REF	7.2230	IN.
REF	7.2230	IN.
MRP	4.3340	IN.
MRP	0.0000	IN.
MRP	0.0000	IN.
CALE	0.0034	

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EFFECTS OF MACH NUMBER - N1B1F6 - LONGITUDINAL CHARACTERISTICS

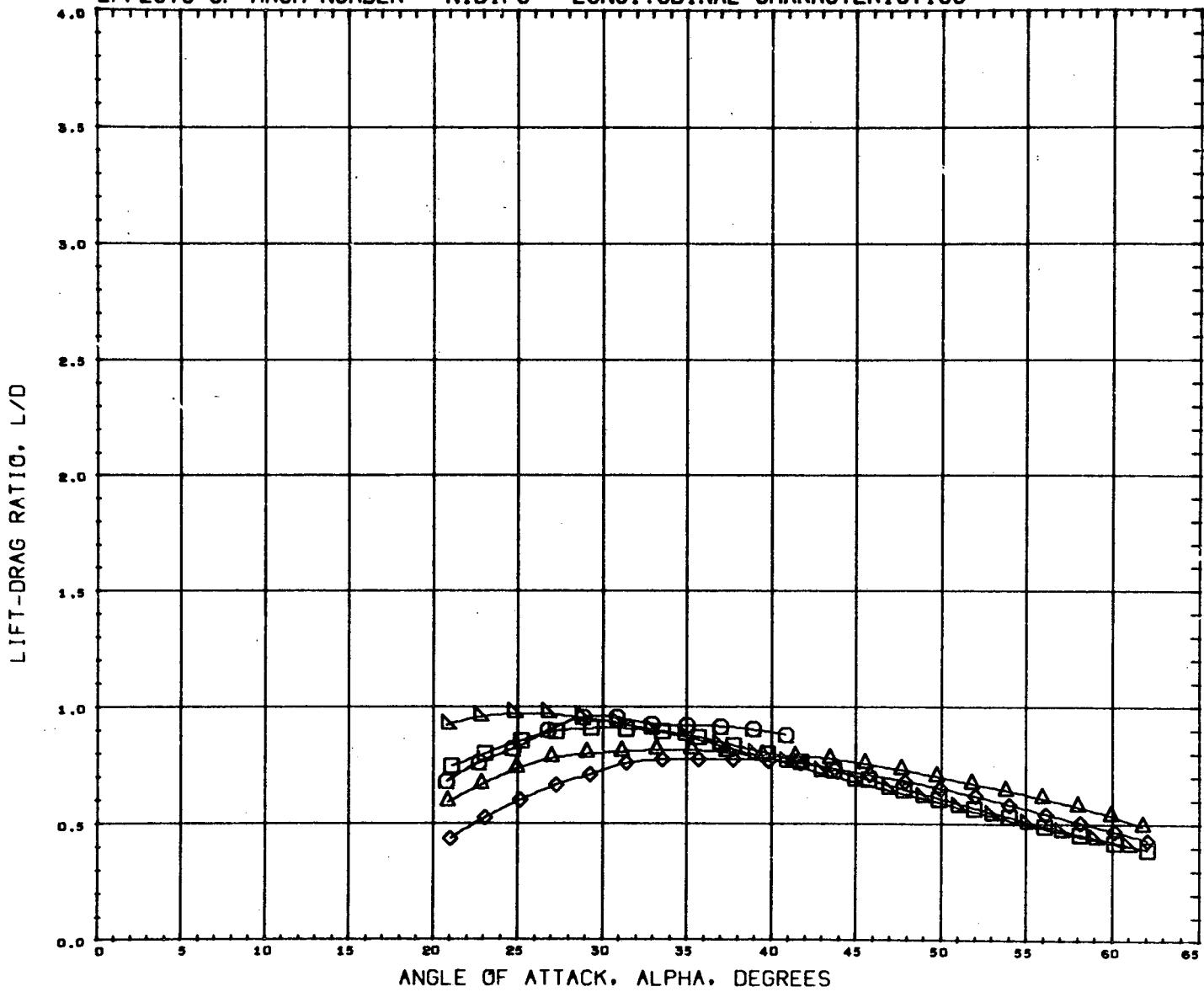


SYMBOL	MACH	PARAMETRIC VALUES		
		BETA	DIMHDL	45.000
○	0.599	0.000		
□	0.900			
◇	1.197			
△	1.961			
▽	4.959			

DATA MIST. CODE STV*E**

REFERENCE INFORMATION		
SREF	0.9330	SG. IN.
LREF	7.2230	IN.
BREF	7.2230	IN.
XHRP	4.3340	IN.
YHRP	0.0000	IN.
ZHRP	0.0000	IN.
SCALE	0.0034	

EFFECTS OF MACH NUMBER - N1B1F6 - LONGITUDINAL CHARACTERISTICS



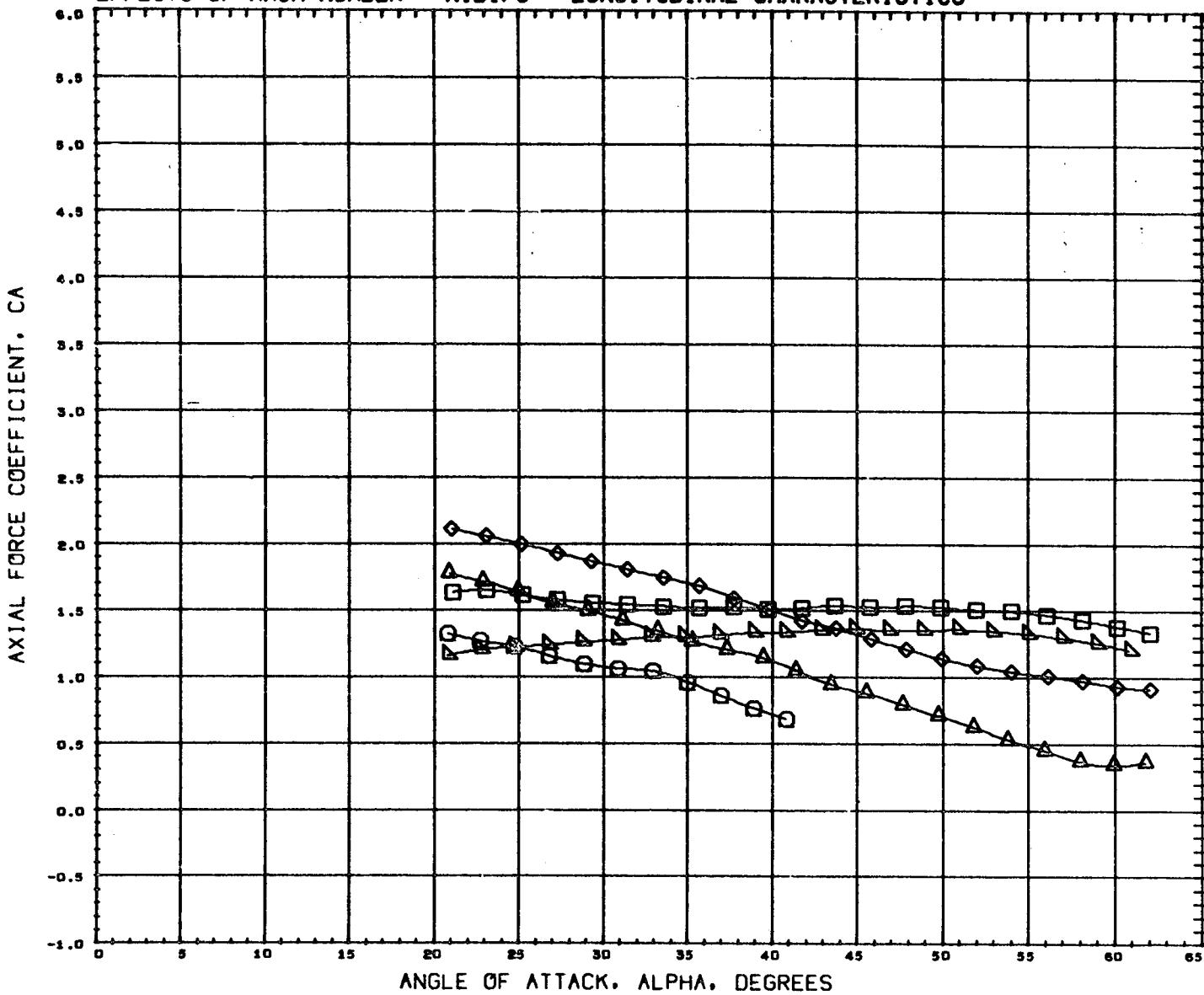
SYMBOL	MACH	PARAMETRIC VALUES		
		BETA	0.000	DIMDRL
○	0.599			45.000
△	0.900			
◊	1.197			
□	1.961			
▽	4.959			
		DATA MIST. CODE	STV*E*G	

REFERENCE INFORMATION

REF	0.9330	SQ.IN.
REF	7.2230	IN.
REF	7.2230	IN.
WRP	4.3340	IN.
WRP	0.0000	IN.
WRP	0.0000	IN.
CALE	0.0034	

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EFFECTS OF MACH NUMBER - N1B1FC - LONGITUDINAL CHARACTERISTICS



SYMBOL	MACH	PARAMETRIC VALUES		
	0.599	BETA	0.000	DIMDRL
	0.900			45.000
	1.197			
	1.961			
	4.959			
		DATA MIST. CODE		STV*E8G

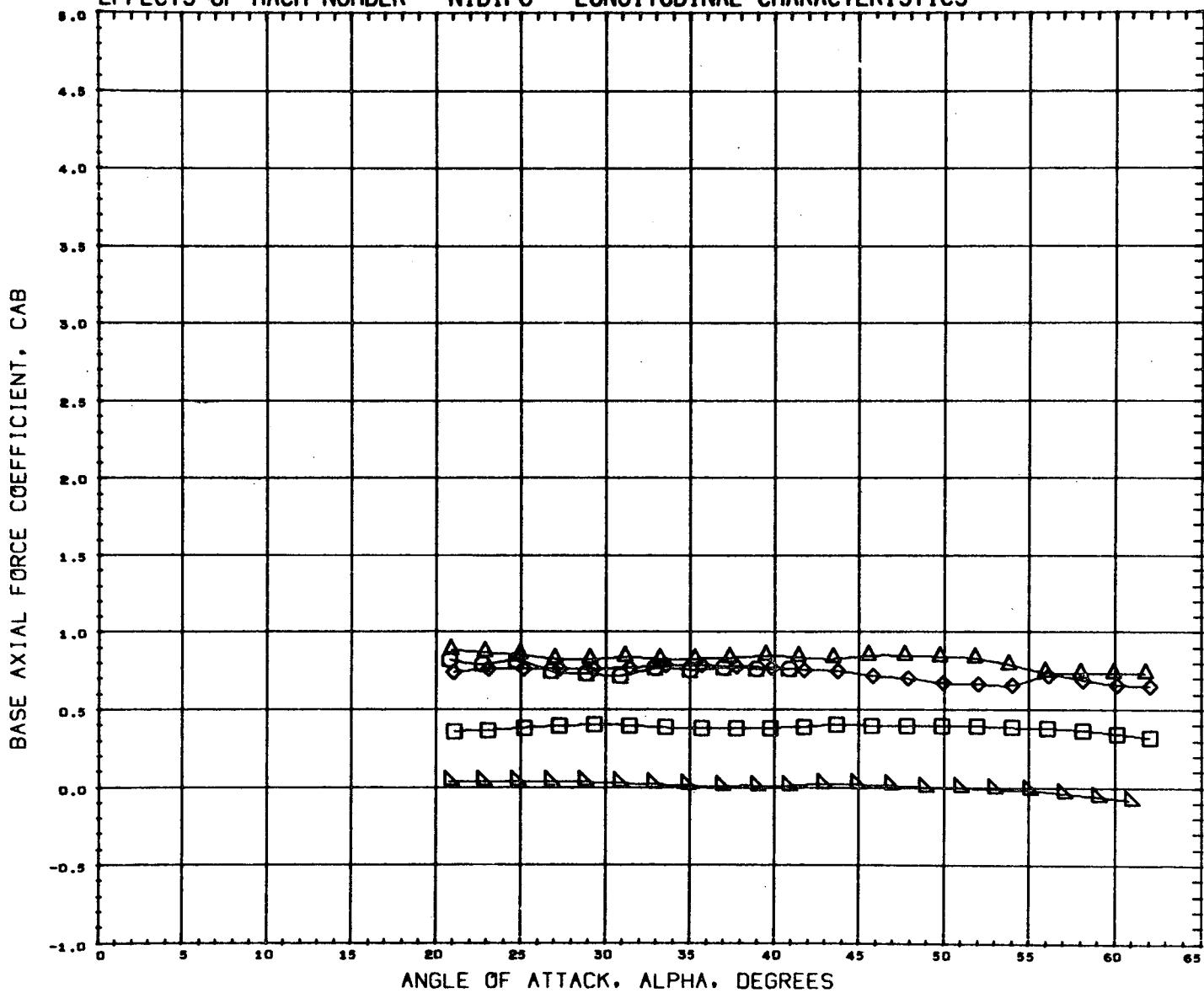
REFERENCE INFORMATION		
REF	0.9330	SQ. IN.
REF	7.2230	IN.
REF	7.2230	IN.
MRP	4.3340	IN.
MRP	0.0000	IN.
MRP	0.0000	IN.
CALE	0.0034	

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EFFECTS OF MACH NUMBER - N1B1F6 - LONGITUDINAL CHARACTERISTICS



SYMBOL	MACH	PARAMETRIC VALUES		
		BETA	0.000	DIMDRL
○	0.599			45.000
△	0.900			
◊	1.197			
□	1.961			
■	4.959			
DATA MIST. CODE STV#E#G				

REFERENCE INFORMATION		
SREF	D.9330	SQ.IN.
SREF	7.2230	IN.
SREF	7.2230	IN.
XMRP	4.3340	IN.
XMRP	0.0000	IN.
XMRP	0.0000	IN.
SCALE	D.0034	

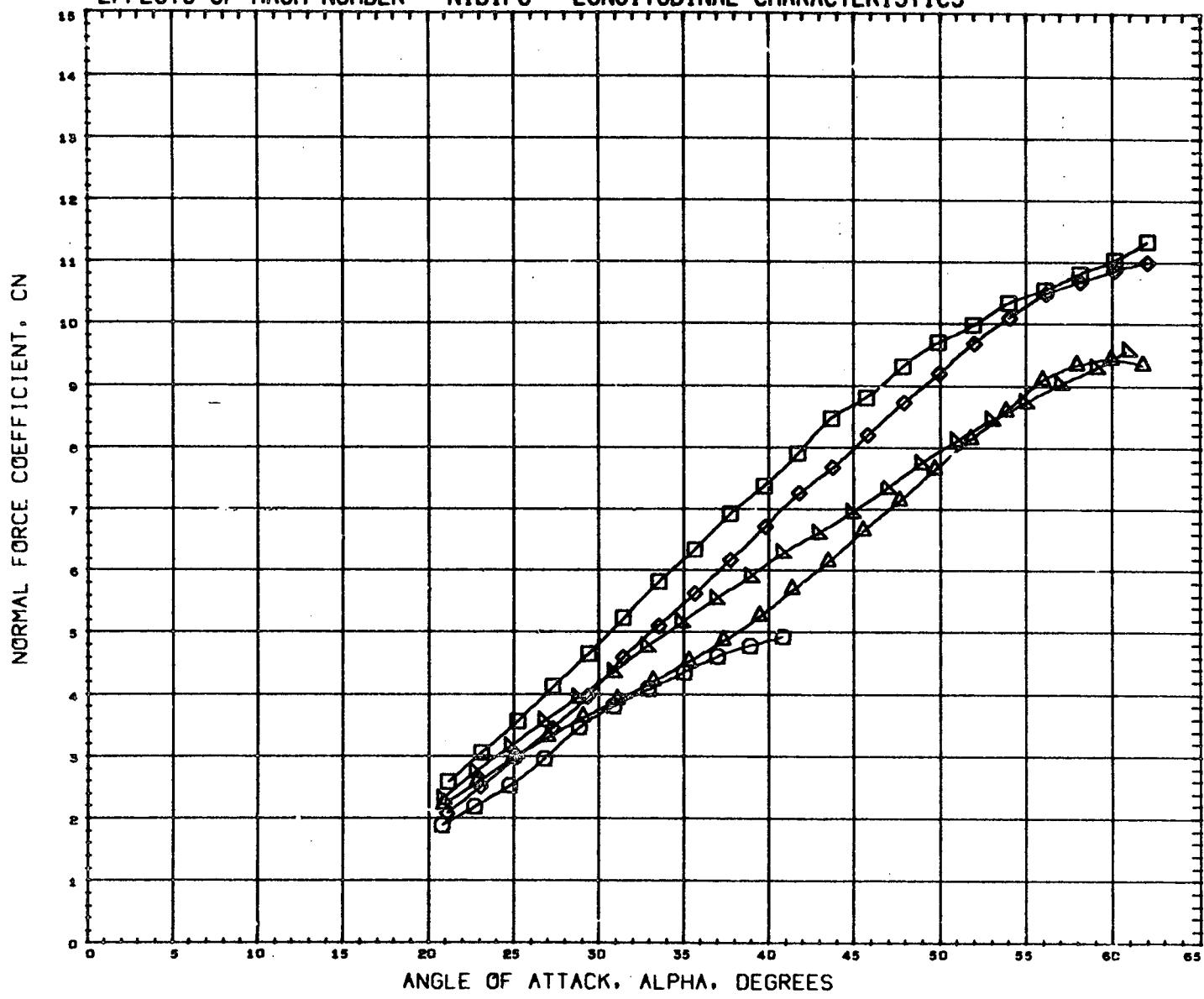
DATA HIST. CODE STV#E*G

MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F6

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EFFECTS OF MACH NUMBER - N1B1F6 - LONGITUDINAL CHARACTERISTICS

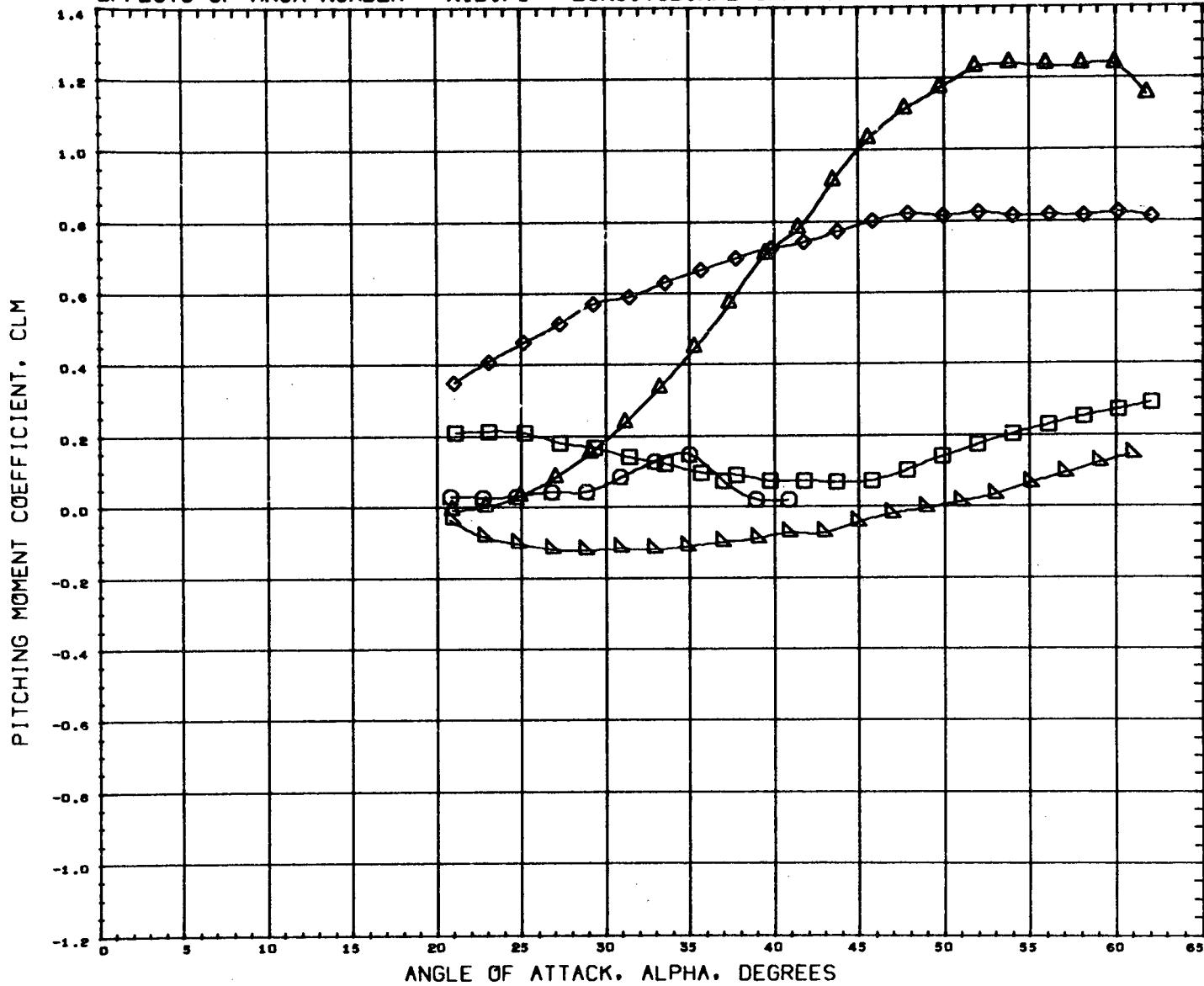


SYMBOL MACH PARAMETRIC VALUES
○ 0.599 BETA 0.000 DIMDRL 45.000
◊ 0.900
△ 1.197
○ 1.961
▽ 4.959

DATA MIST. CODE STV*E*G

REFERENCE INFORMATION
 SREF 0.9330 SG. IN.
 LREF 7.2230 IN.
 BREF 7.2230 IN.
 XMRF 4.3340 IN.
 YMRF 0.0000 IN.
 ZMRF 0.0000 IN.
 SCALE 0.0034

EFFECTS OF MACH NUMBER - N1B1F6 - LONGITUDINAL CHARACTERISTICS

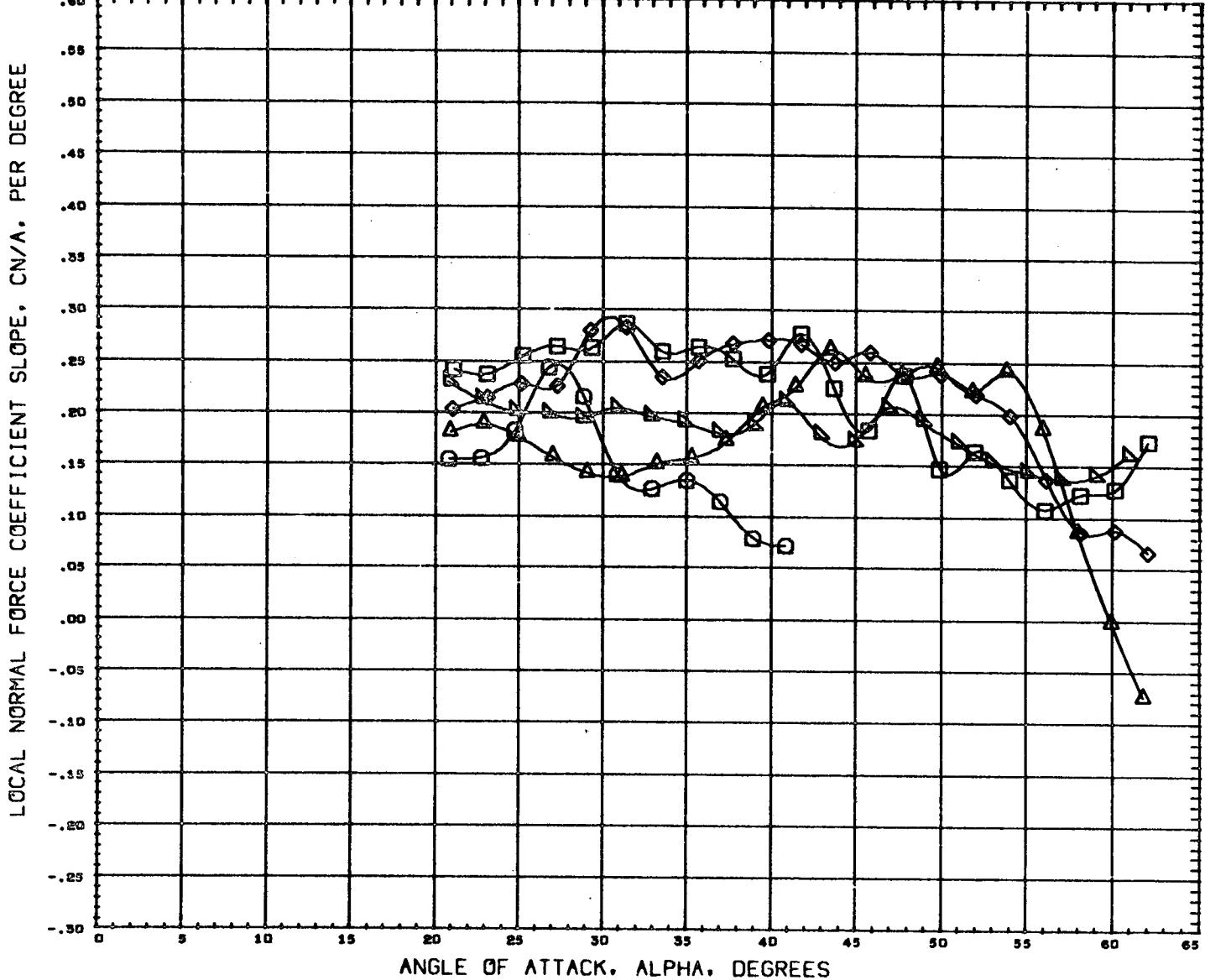


SYMBOL	MACH	BETA	PARAMETRIC VALUES
○	0.599	0.000	DIMHDL 45.000
△	0.900		
◊	1.197		
□	1.961		
□	4.959		

DATA MIST. CODE STV*E*G

REFERENCE INFORMATION		
SREF	0.9330	SG. IN.
LREF	7.2230	IN.
BREF	7.2230	IN.
XMRP	4.3340	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

EFFECTS OF MACH NUMBER - N1B1F6 - LONGITUDINAL CHARACTERISTICS



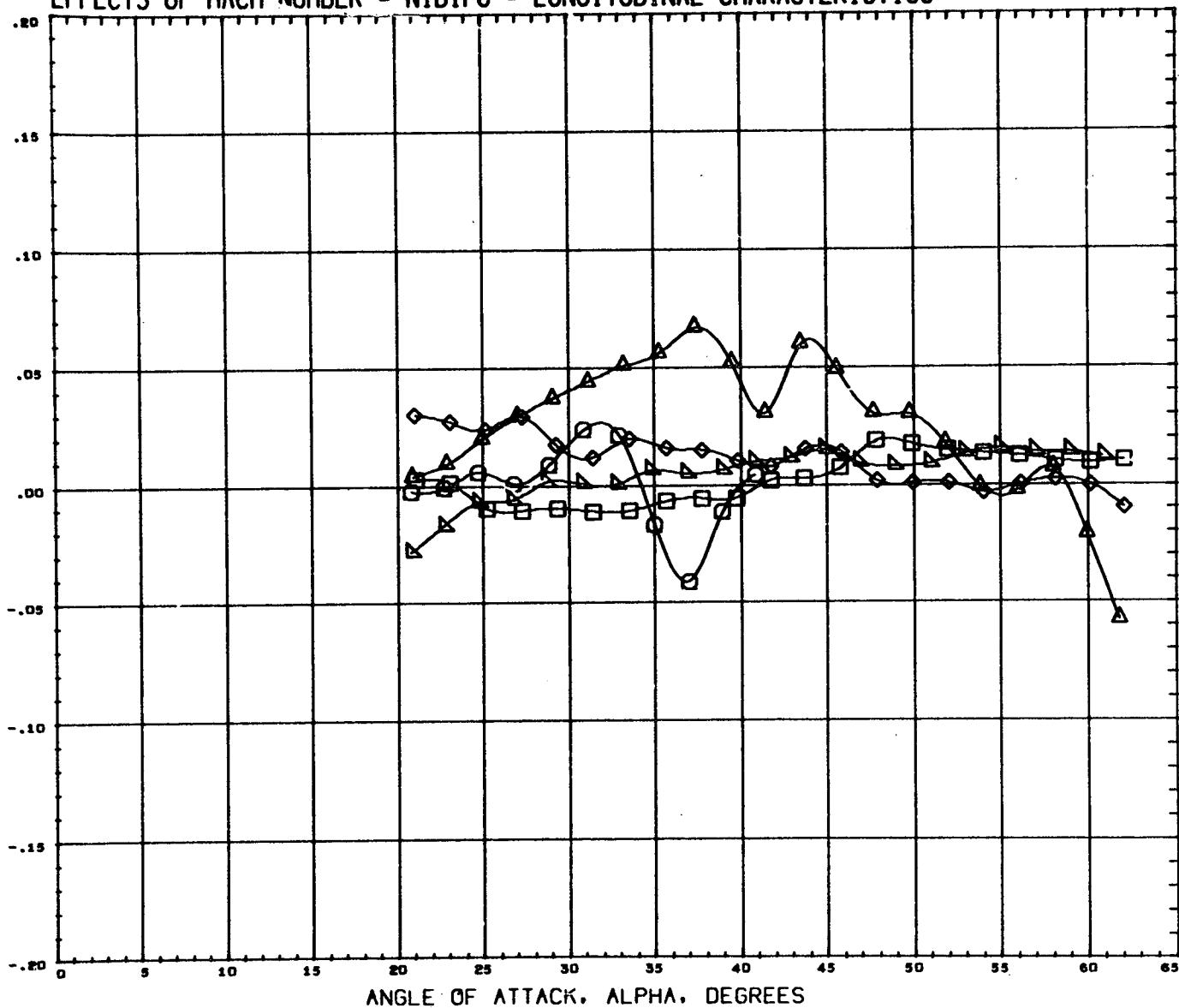
SYMBOL	MACH	BETA	PARAMETRIC VALUES
□	0.599	0.000	DIMDRL 45.000
△	0.900		
◊	1.197		
○	1.981		
×	4.999		

DATA MIST. CODE STV*E*G

REFERENCE INFORMATION		
SREF	0.9330	SG. IN.
LREF	7.2230	IN.
BREF	7.2230	IN.
XMRP	4.3340	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

EFFECTS OF MACH NUMBER - N1B1F6 - LONGITUDINAL CHARACTERISTICS

LOCAL PITCHING MOMENT COEFFICIENT SLOPE, CLM/A. PER DEGREE



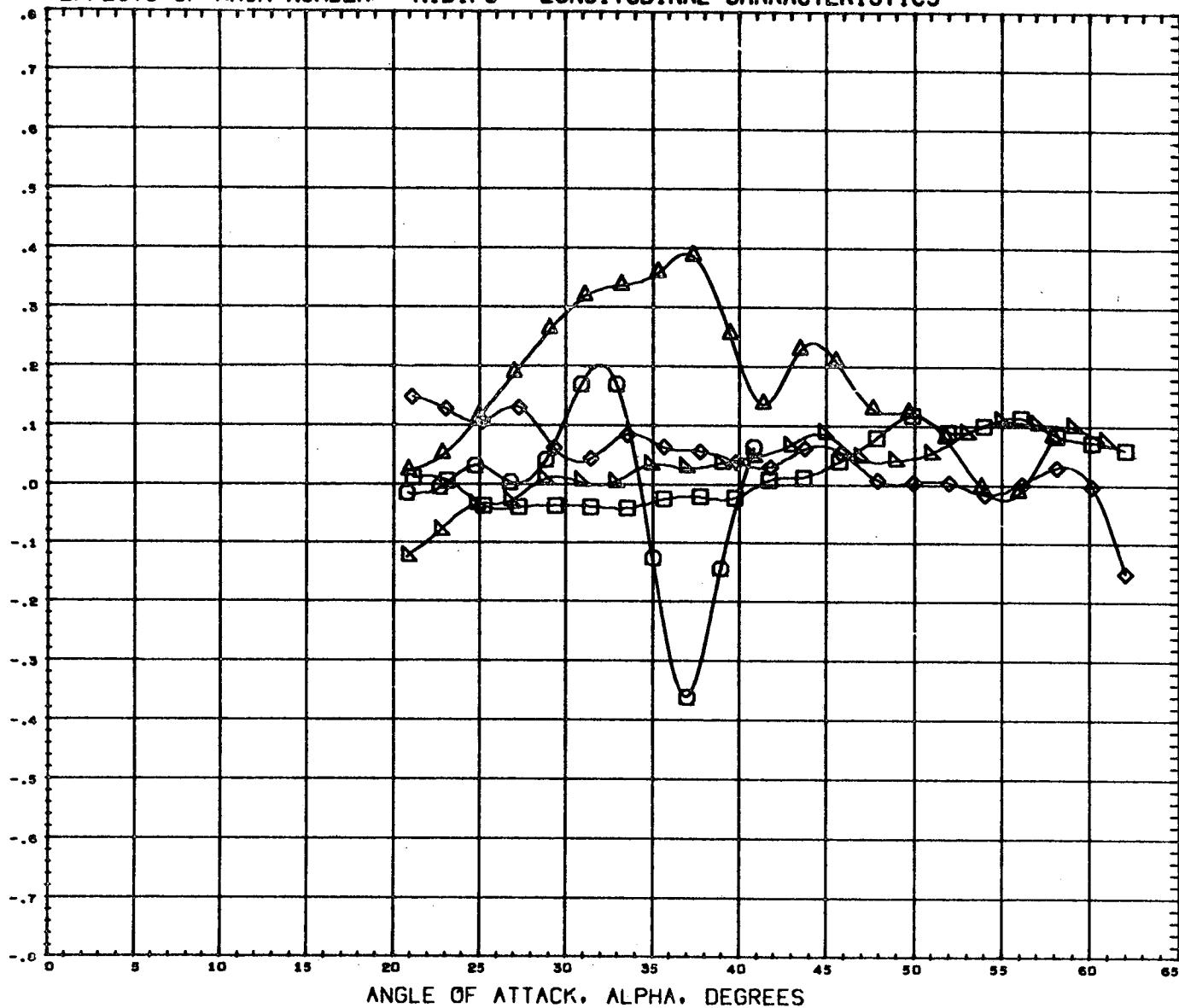
SYMBOL
 □ ◇ △ ◆

MACH
 0.599 BETA
 0.000 DMDRL 45.000
 DATA HIST. CODE STV*E*G

PARAMETRIC VALUES
 REFERENCE INFORMATION
 SREF 0.9330 SQ. IN.
 LREF 7.2250 IN.
 BREF 7.2250 IN.
 XMRP 4.3340 IN.
 YMRP 0.0000 IN.
 ZMRP 0.0000 IN.
 SCALE 0.0034

EFFECTS OF MACH NUMBER - N1B1F6 - LONGITUDINAL CHARACTERISTICS

LOCAL CENTER OF PRESSURE, XAC = CLM/A / CNA



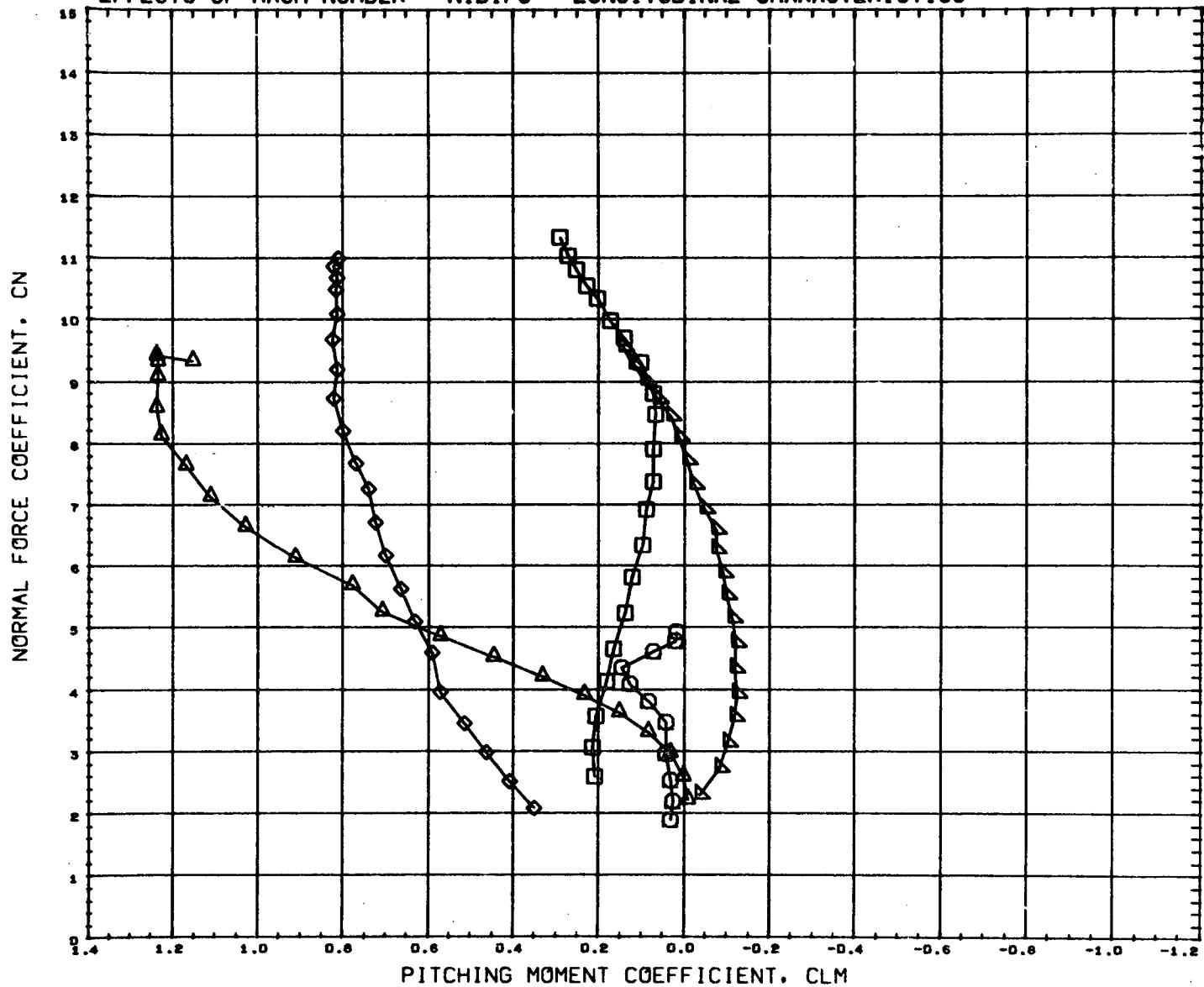
SYMBOL MACH
 ○ 0.599 BETA 0.000
 ▲ 0.900
 ▾ 1.197
 ▽ 1.961
 □ 4.959

PARAMETRIC VALUES
 DIMDRL 45.000

DATA MIST. CODE SGC*G*G

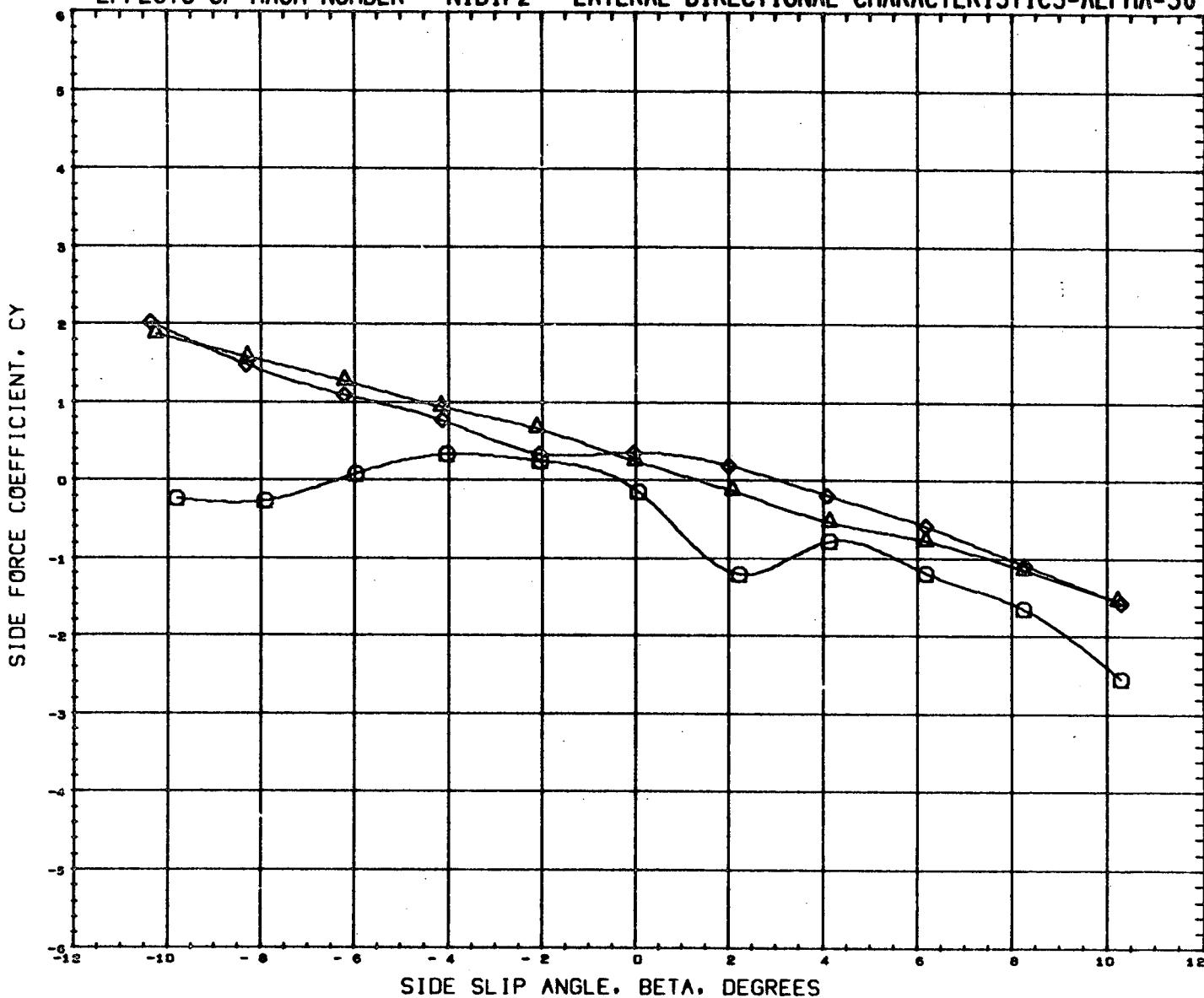
REFERENCE INFORMATION		
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LREF	7.2230	IN.
BREF	7.2230	IN.
XMRP	4.3340	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

EFFECTS OF MACH NUMBER - N1B1F6 - LONGITUDINAL CHARACTERISTICS



SYMBOL	PARAMETRIC VALUES			REFERENCE INFORMATION	
	MACH	BETA	DIMDRL	SREF	LREF
◊	0.599	0.000	45.000	0.9330	IN.
◊	0.900			7.2230	IN.
◊	1.197			7.2230	IN.
◊	1.961			4.3340	IN.
◊	4.959			0.0000	IN.
DATA HIST. CODE STV*E*G			ZMRP	0.0000	IN.
			SCALE	0.0034	

EFFECTS OF MACH NUMBER - N1B1F2 - LATERAL-DIRECTIONAL CHARACTERISTICS-ALPHA=30

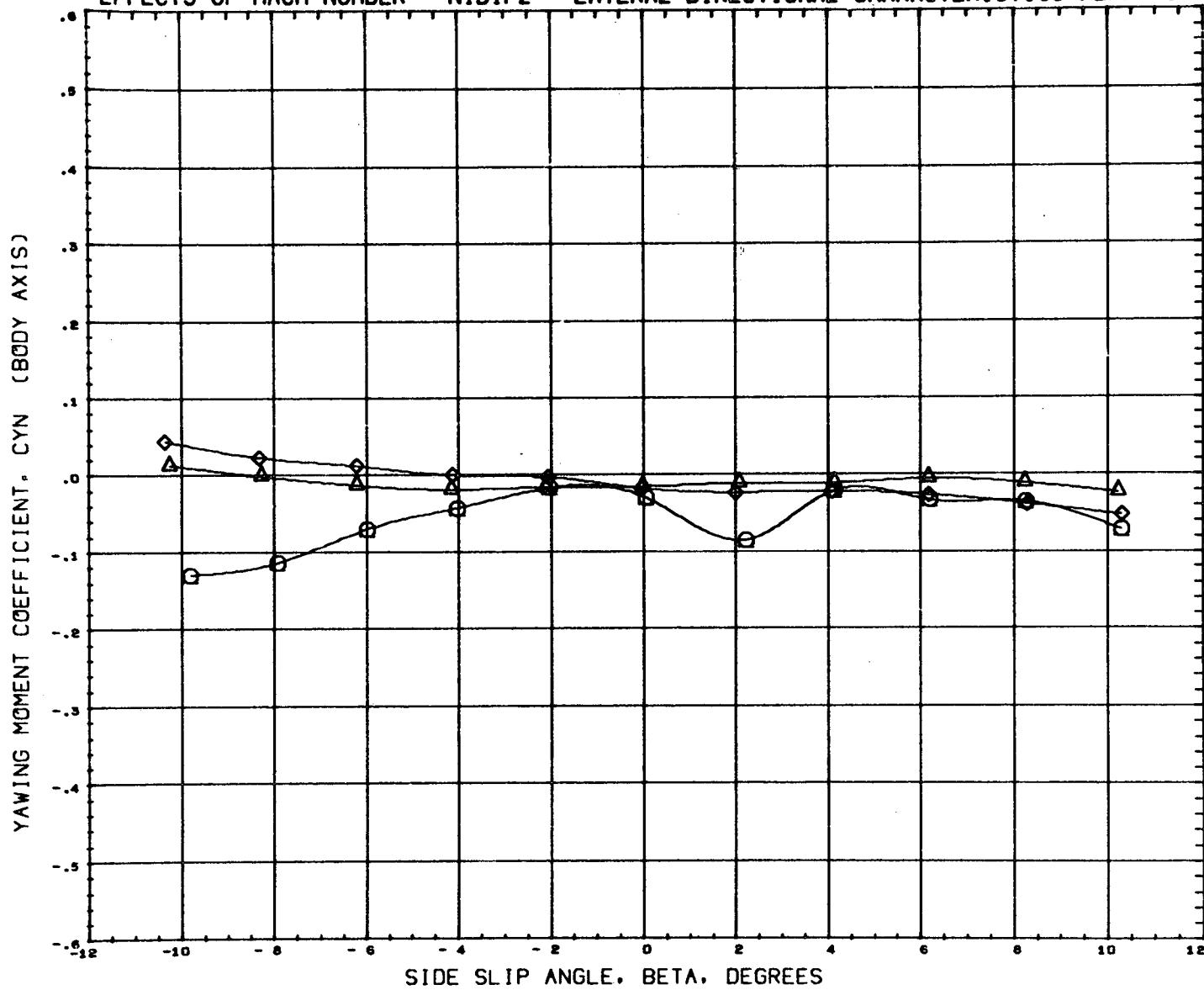


SYMBOL	MACH	PARAMETRIC VALUES		
○	0.603	ALPHA	30.000	DIMTRL
△	0.902			
◊	1.201			

DATA MIST. CODE

REFERENCE INFORMATION		
SREF	0.9330	SQ.IN.
LREF	7.2230	IN.
BREF	7.2230	IN.
XMRP	4.3340	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

EFFECTS OF MACH NUMBER - N1B1F2 - LATERAL-DIRECTIONAL CHARACTERISTICS-ALPHA=30



SYMBOL	MACH	PARAMETRIC VALUES		
	0.603	ALPHA	30.000	DIMDRL
	0.902			
	1.201			

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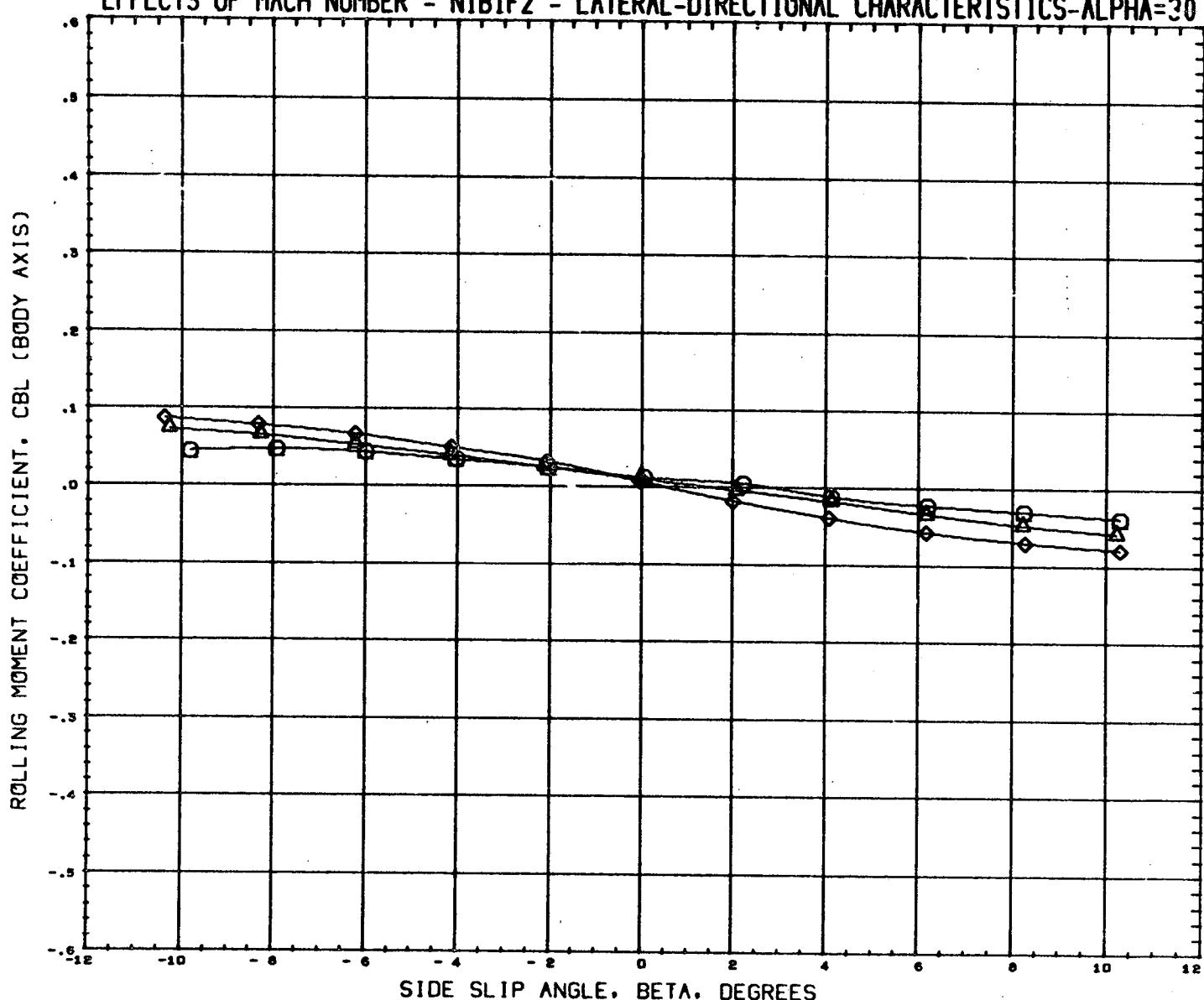
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SREF      0.9330    SQ.IN.
LREF      7.2230    IN.
BREF      7.2230    IN.
XMRP      4.334U    IN.
YMRP      0.0000    IN.
ZMRP      0.0000    IN.
SCALE     0.0034

```

DATA HIST. CODE S

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EFFECTS OF MACH NUMBER - N1B1F2 - LATERAL-DIRECTIONAL CHARACTERISTICS-ALPHA=30



SYMBOL	MACH	PARAMETRIC VALUES
	0.603	ALPHA 30.000 DIHDL 30.000
	0.902	
	1.201	

REFERENCE INFORMATION		
SREF	0.9330	SG.IN.
LREF	7.2230	IN.
BREF	7.2230	IN.
XMRP	4.3340	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

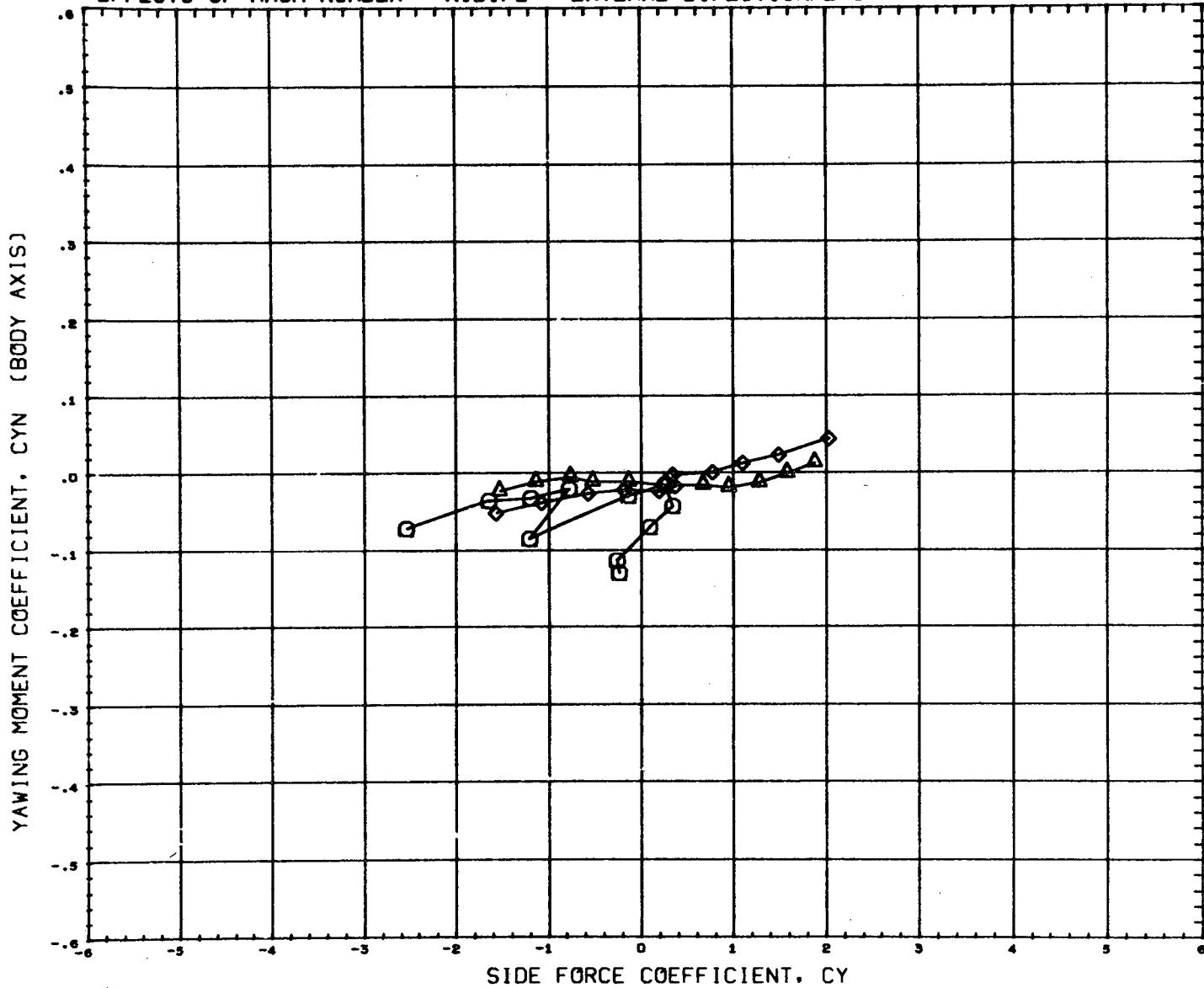
DATA HIST. CODE 8

MSFC 518 MSFC PRESSURE FED BOOSTER N1B1F2

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EFFECTS OF MACH NUMBER - N1B1F2 - LATERAL-DIRECTIONAL CHARACTERISTICS-ALPHA=30



SYMBOL	MACH	PARAMETRIC VALUES		
	0.603	ALPHA	30.000	DIHDRL
	0.902			
	1.201			

REFERENCE INFORMATION		
SREF	G.9330	SQ. IN.
LREF	7.2230	IN.
BREF	7.2230	IN.
XMRP	4.3340	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

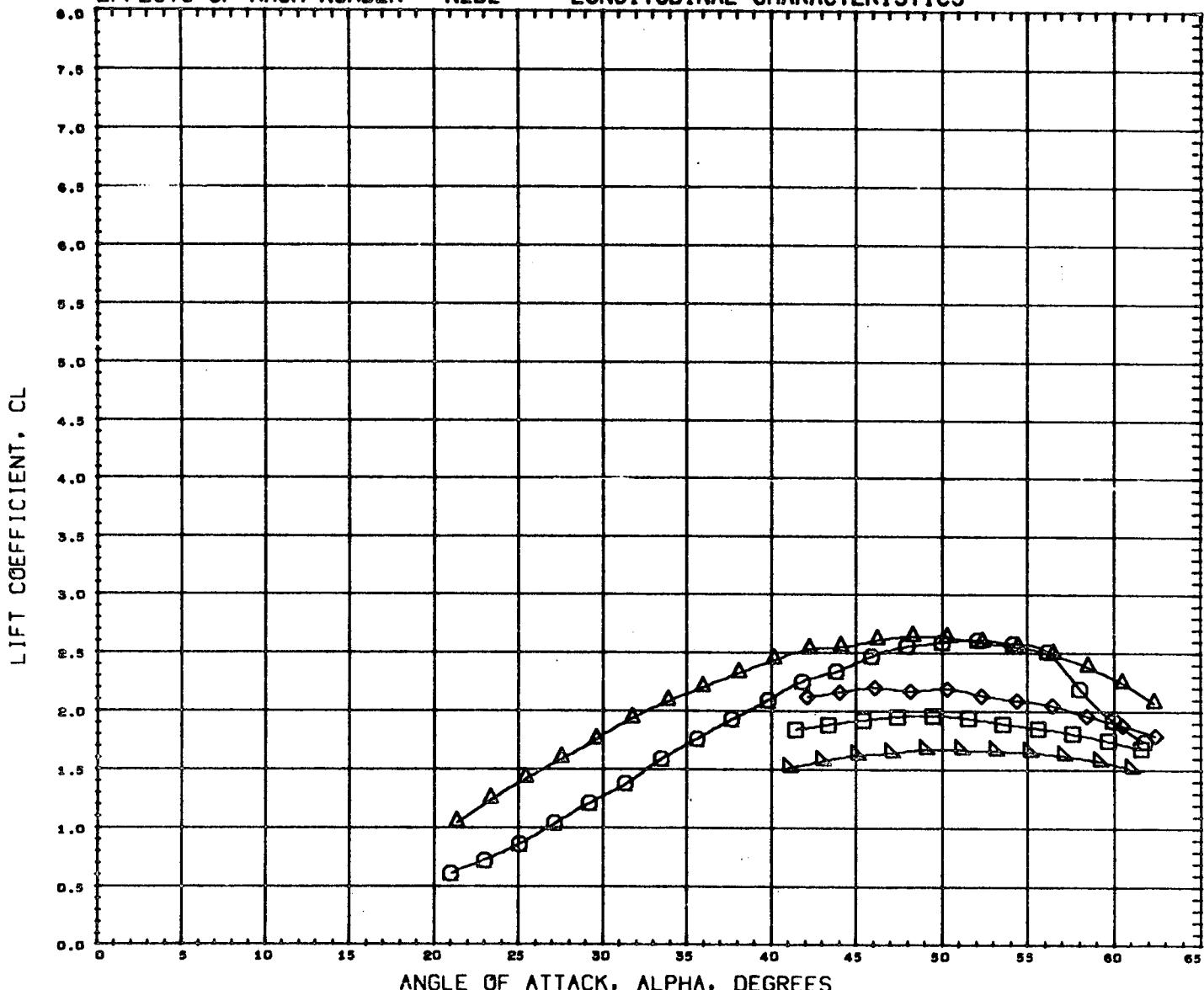
DATA HIST. CODE S

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EFFECTS OF MACH NUMBER - N2B2 - LONGITUDINAL CHARACTERISTICS

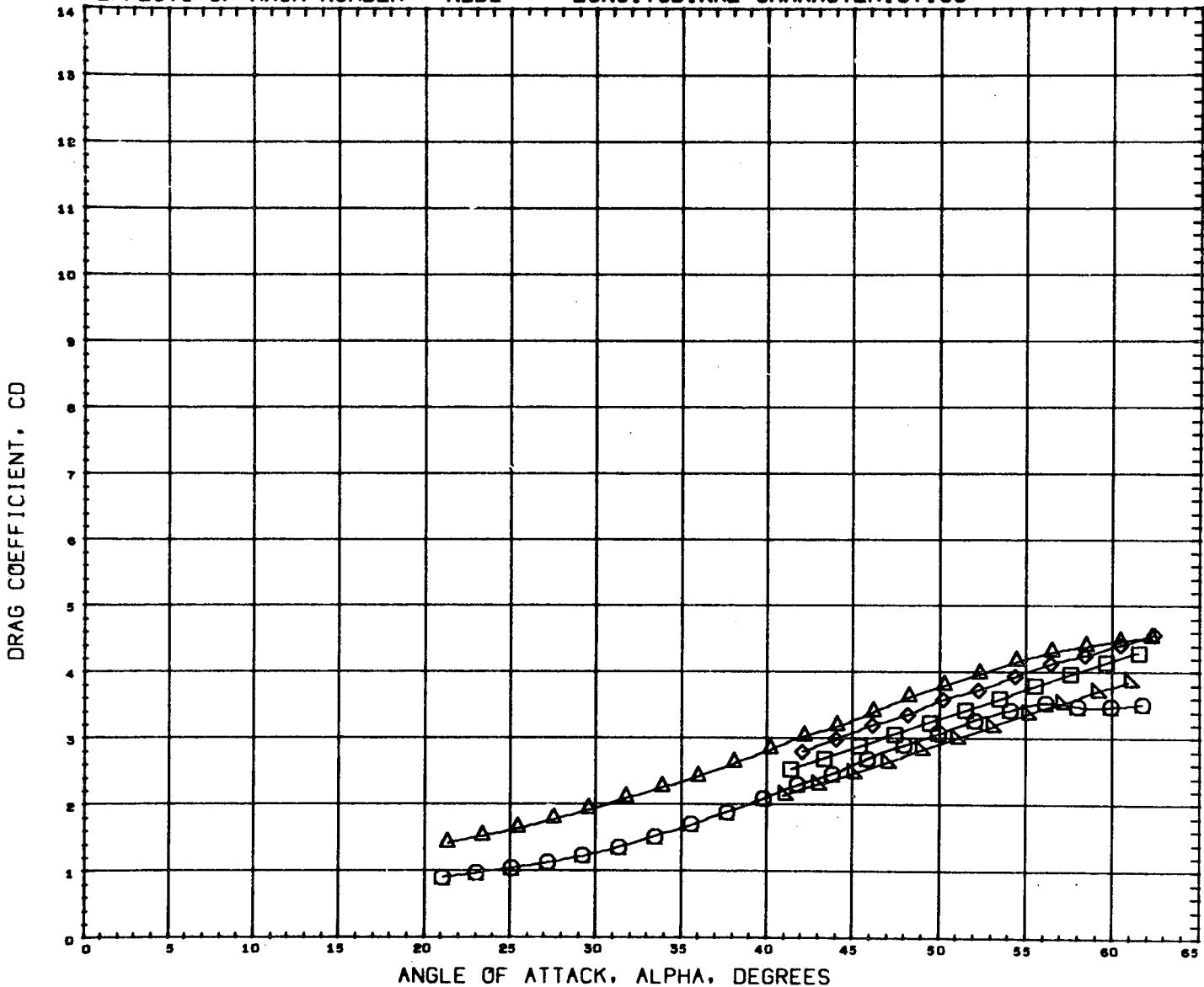


SYMBOL	MACH	BETA	PARAMETRIC VALUES
○	0.001		0.000
△	1.199		
◊	1.994		
□	2.740		
▽	4.059		

DATA MIST. CODE MSTVFE*G

REFERENCE INFORMATION		
SREF	2.1590	SG. IN.
LREF	5.6590	IN.
BREF	5.6590	IN.
XMRP	3.5150	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

EFFECTS OF MACH NUMBER - N2B2 - LONGITUDINAL CHARACTERISTICS



SYMBOL	MACH	PARAMETRIC VALUES
○	0.901	BETA 0.000
△	1.199	
◊	1.964	
□	2.740	
▽	4.959	
		DATA HIST. CODE MSTV*E*G

DATA HIST. CODE MSTV*E*G

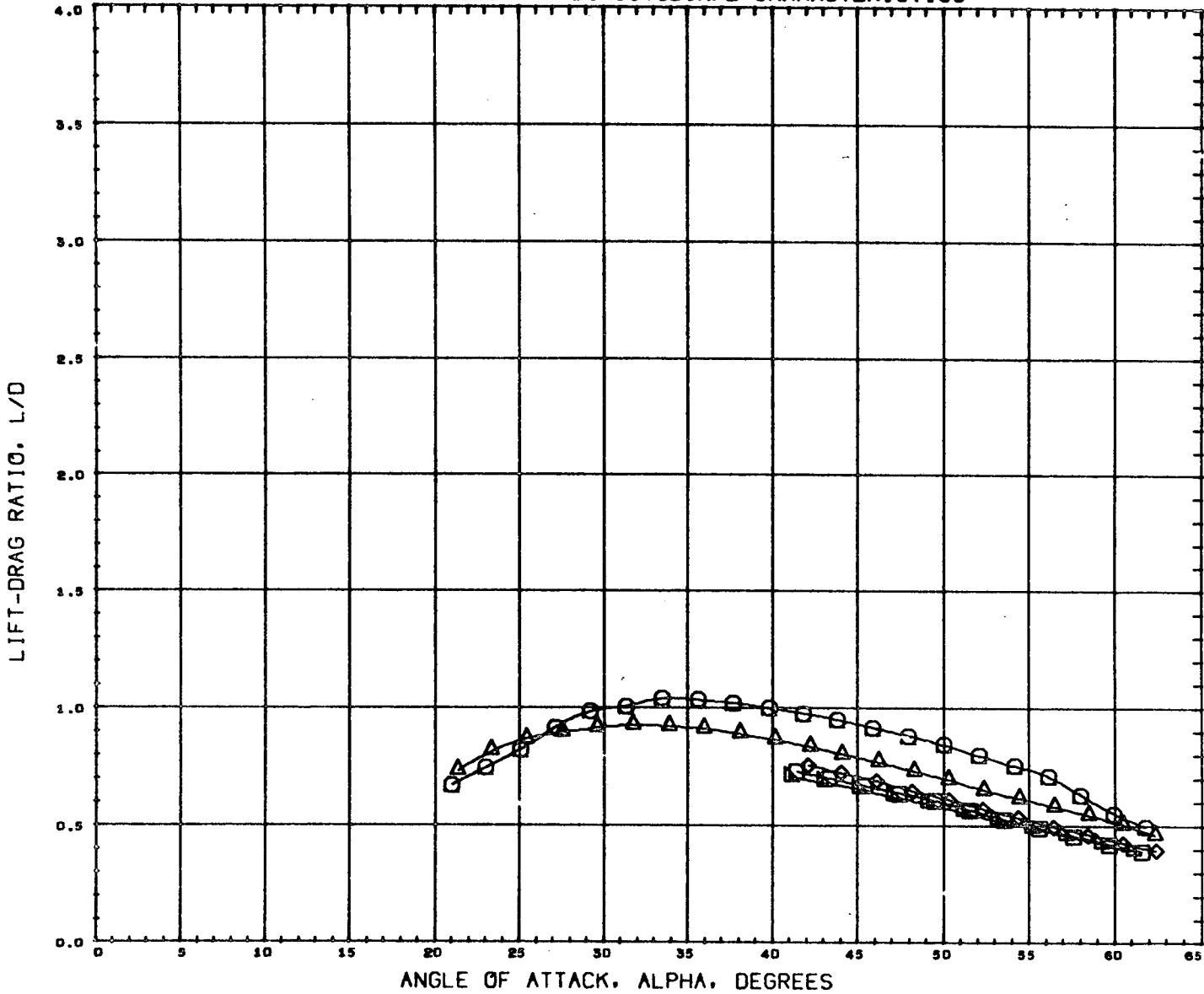
REFERENCE INFORMATION		
REF	2.1590	SQ.IN.
REF	5.8590	IN.
REF	5.8590	IN.
MRP	5.5150	IN.
MRP	0.0000	IN.
MRP	0.0000	IN.
CALE	0.0034	

MSFC 518 PRESS FED BOOSTER CONFIG X N2B2

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EFFECTS OF MACH NUMBER - N2B2 - LONGITUDINAL CHARACTERISTICS



SYMBOL	MACH	PARAMETRIC VALUES
	0.901	BETA 0.000
	1.199	
	1.964	
	2.740	
	4.959	
		DATA MIST. CODE MSTV*E*G

DATA HIST. CODE MSTV*E*G

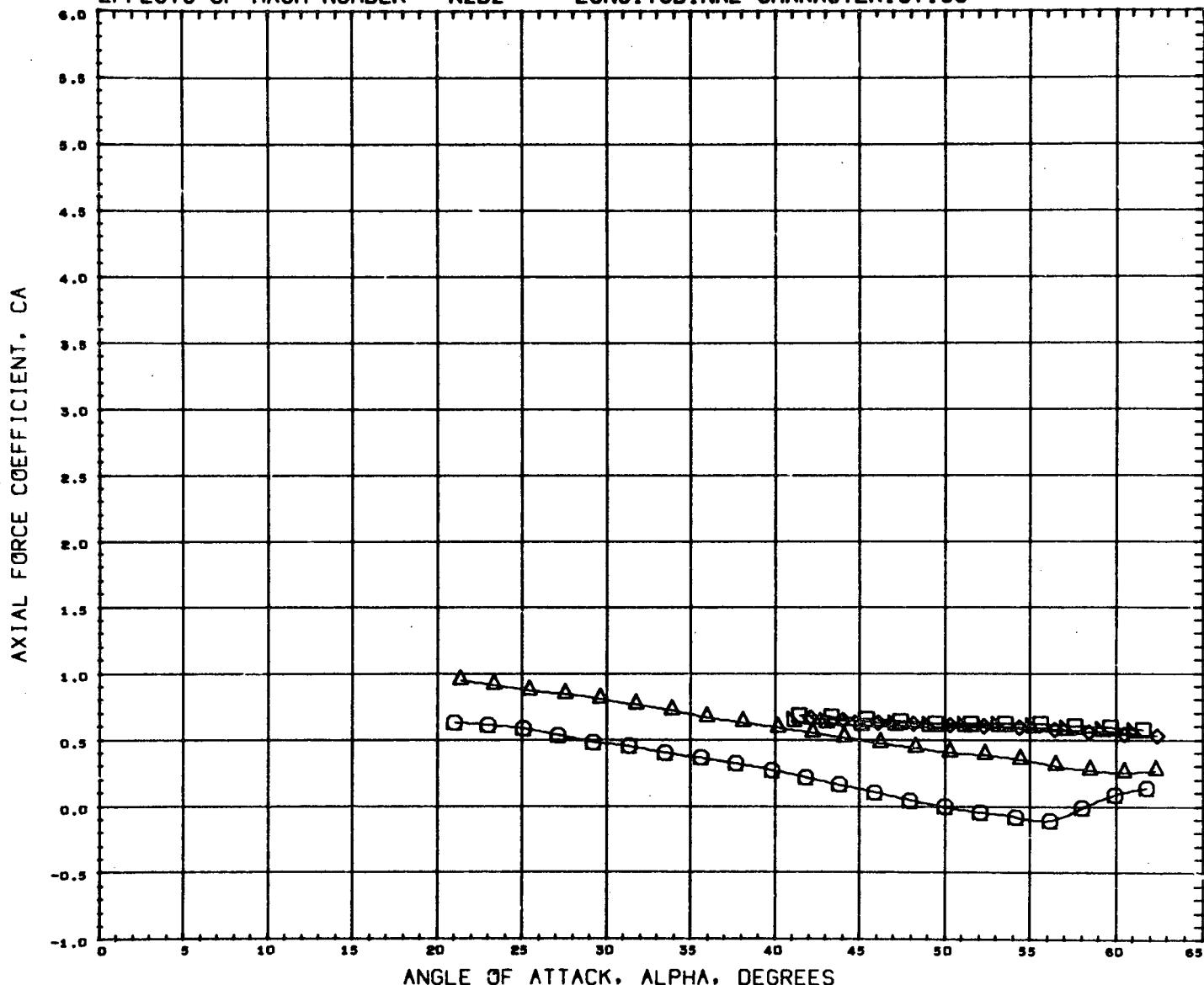
REFERENCE INFORMATION		
REF	2.1590	SQ.IN.
REF	5.8590	IN.
REF	5.8590	IN.
MRP	3.5150	IN.
MRP	0.0000	IN.
MRP	0.0000	IN.
CALE	0.0034	

MSFC 518 PRESS FED BOOSTER CONFIG X N2B2

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EFFECTS OF MACH NUMBER - N2B2 - LONGITUDINAL CHARACTERISTICS



SYMBOL	MACH	PARAMETRIC VALUES
○	0.901	BETA
△	1.199	
◊	1.964	
□	2.740	0.000

DATA HIST. CODE MSTV*E*G

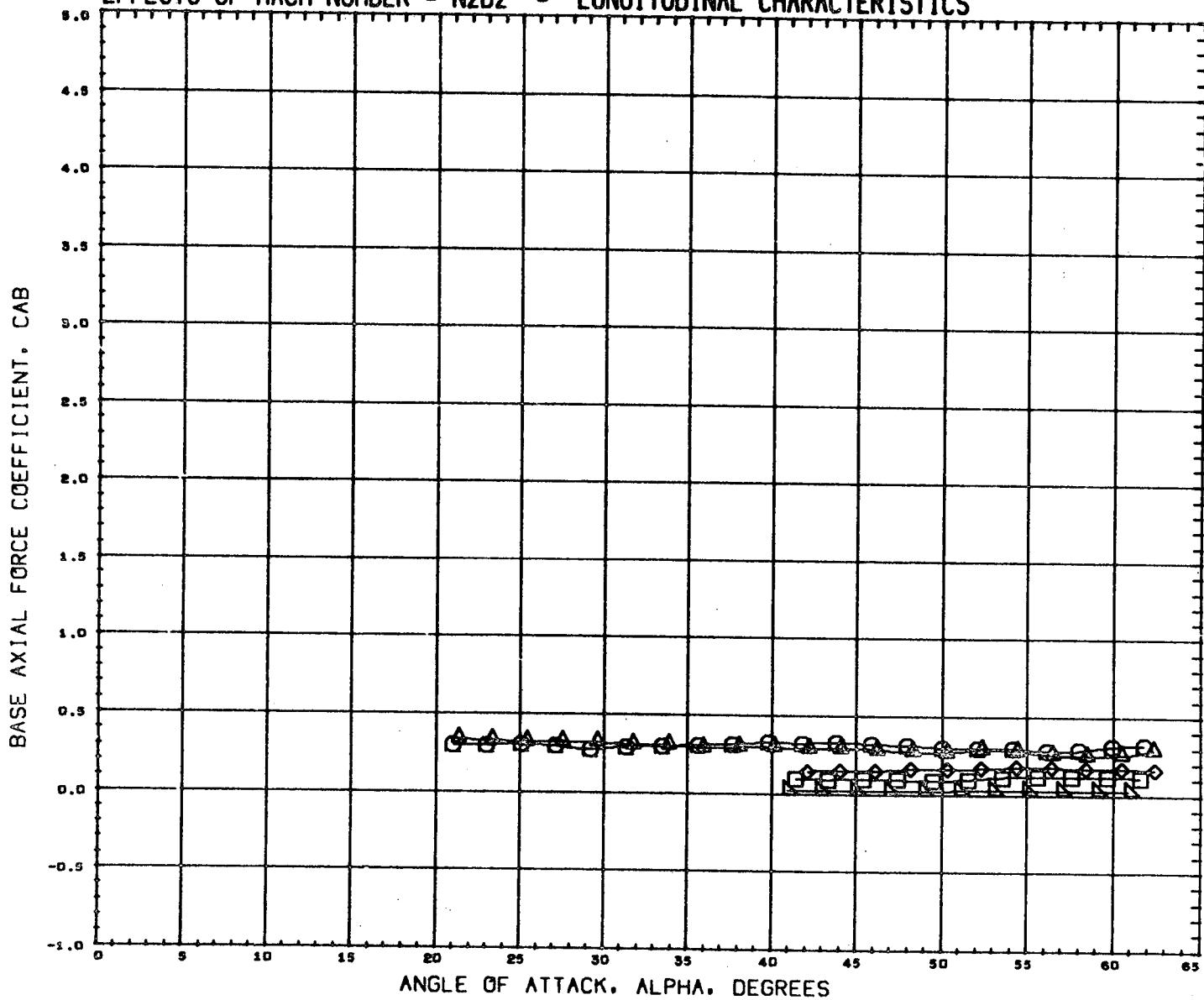
REFERENCE INFORMATION		
REF	2.1590	SQ.IN.
REF	5.8590	IN.
REF	5.8590	IN.
MRP	3.5150	IN.
MRP	0.0000	IN.
MRP	0.0000	IN.
CALE	0.0034	

MSFC 518 PRESS FED BOOSTER CONFIG X N2B2

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EFFECTS OF MACH NUMBER - N2B2 - LONGITUDINAL CHARACTERISTICS

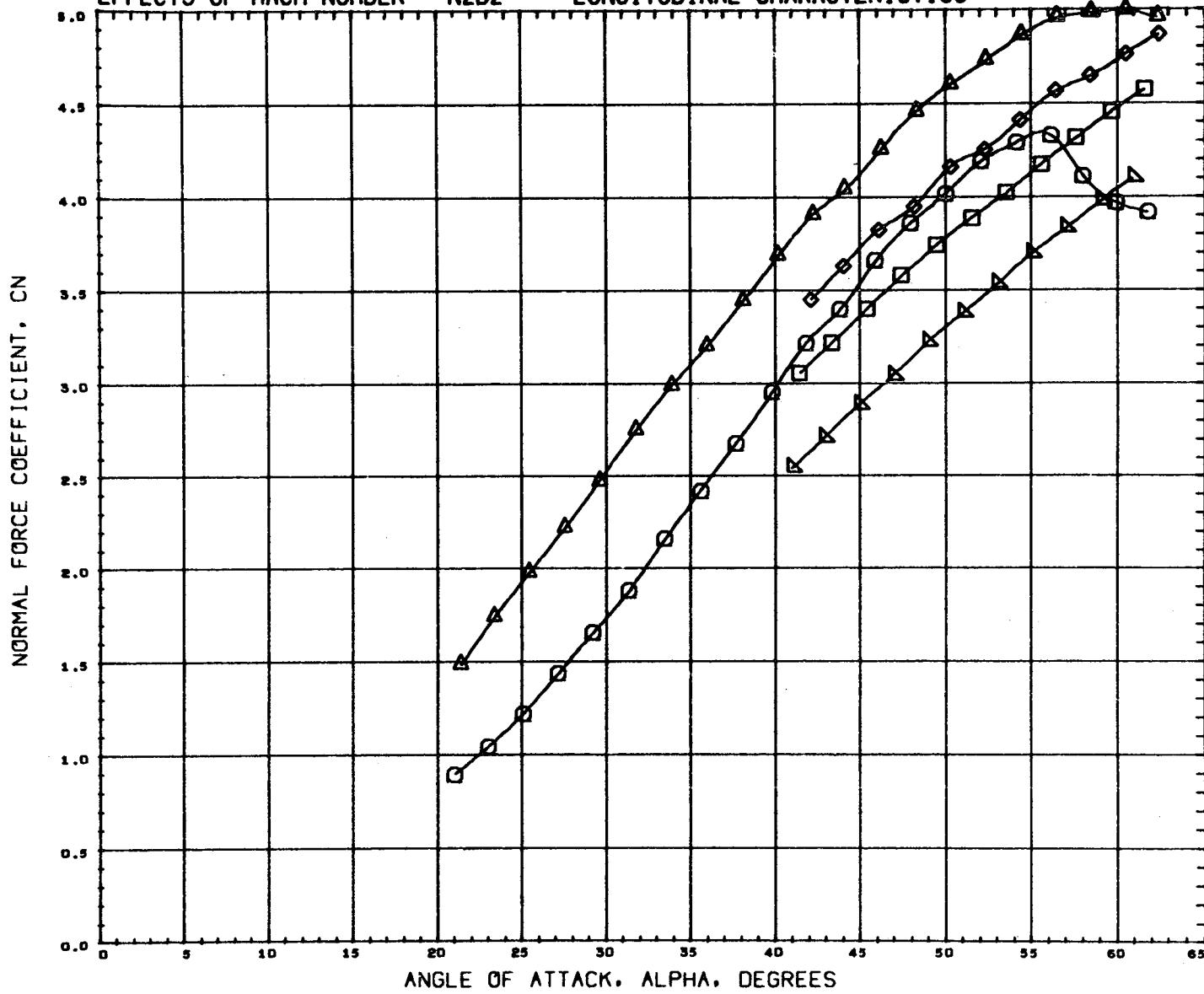


SYMBOL	MACH	PARAMETRIC VALUES
○	0.901	BETA 2.199
◇		0.000
□	3.964	
△	2.740	
×	4.959	

DATA MIST. CODE MSTV*E*G

REFERENCE INFORMATION		
SREF	2.1590	SQ. IN.
LREF	5.8590	IN.
BREF	5.8590	IN.
XMRP	3.5150	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

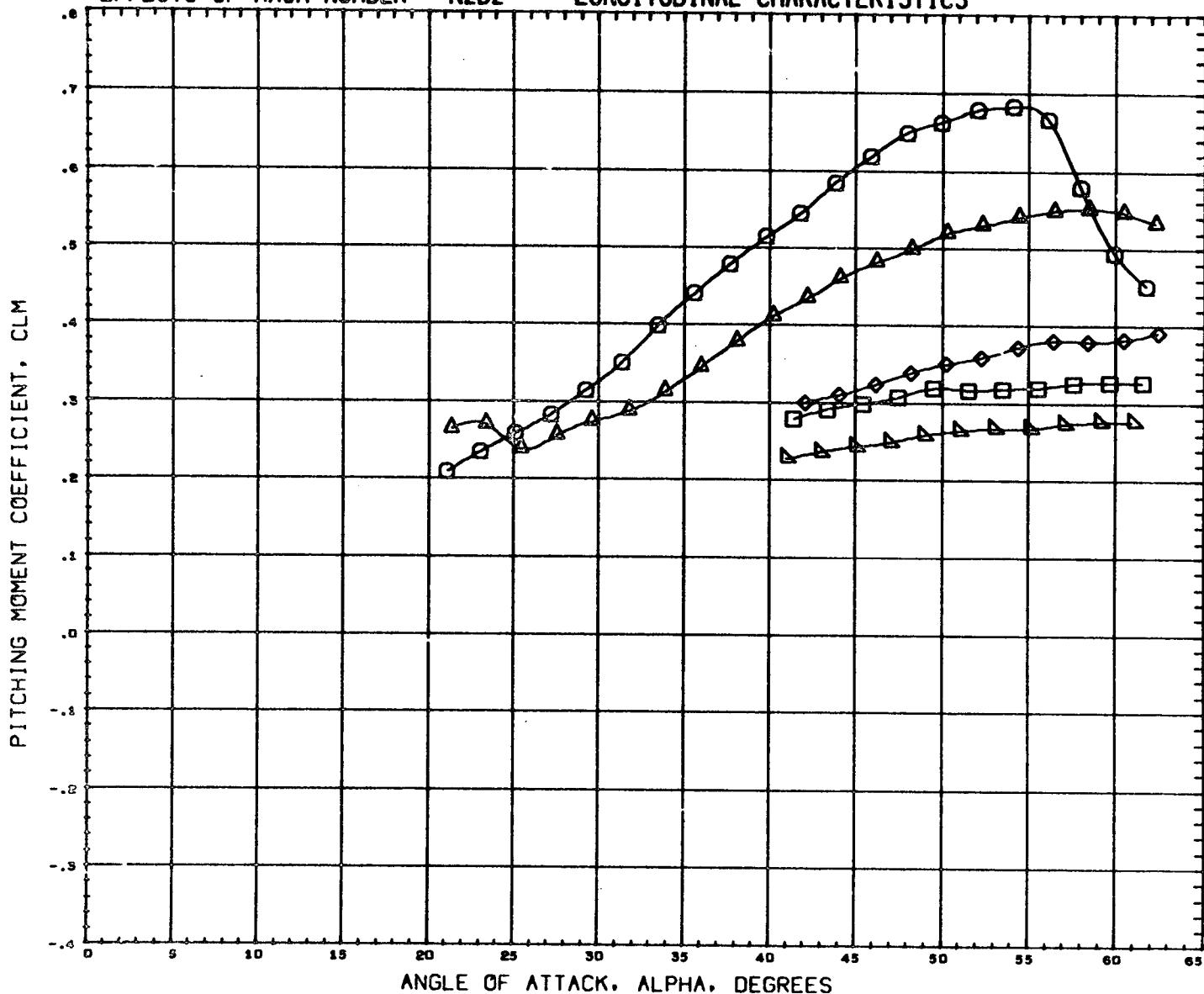
EFFECTS OF MACH NUMBER - N2B2 - LONGITUDINAL CHARACTERISTICS



SYMBOL MACH BETA PARAMETRIC VALUES
 ○ 0.901 0.000
 ▲ 1.199
 ◇ 1.964
 □ 2.740
 △ 4.959
 DATA HIST. CODE MSTV*E*G

REFERENCE INFORMATION
 SREF 2.1590 SQ. IN.
 LREF 5.8590 IN.
 BREF 5.8590 IN.
 XMRP 3.5150 IN.
 YMRF 0.0000 IN.
 ZMRP 0.0000 IN.
 SCALE 0.0034

EFFECTS OF MACH NUMBER - N2B2 - LONGITUDINAL CHARACTERISTICS



SYMBOL	MACH	BETA	PARAMETRIC VALUES	REFERENCE INFORMATION
○	0.901		0.000	SREF 2.1590 SQ.IN.
△	1.199			LREF 5.8590 IN.
□	1.964			BREF 5.8590 IN.
◇	2.740			XHRP 3.5150 IN.
◆	4.090			YHRP 0.0000 IN.
				ZHRP 0.0000 IN.
				SCALE 0.0034

DATA HIST. CODE MSTV*E*G

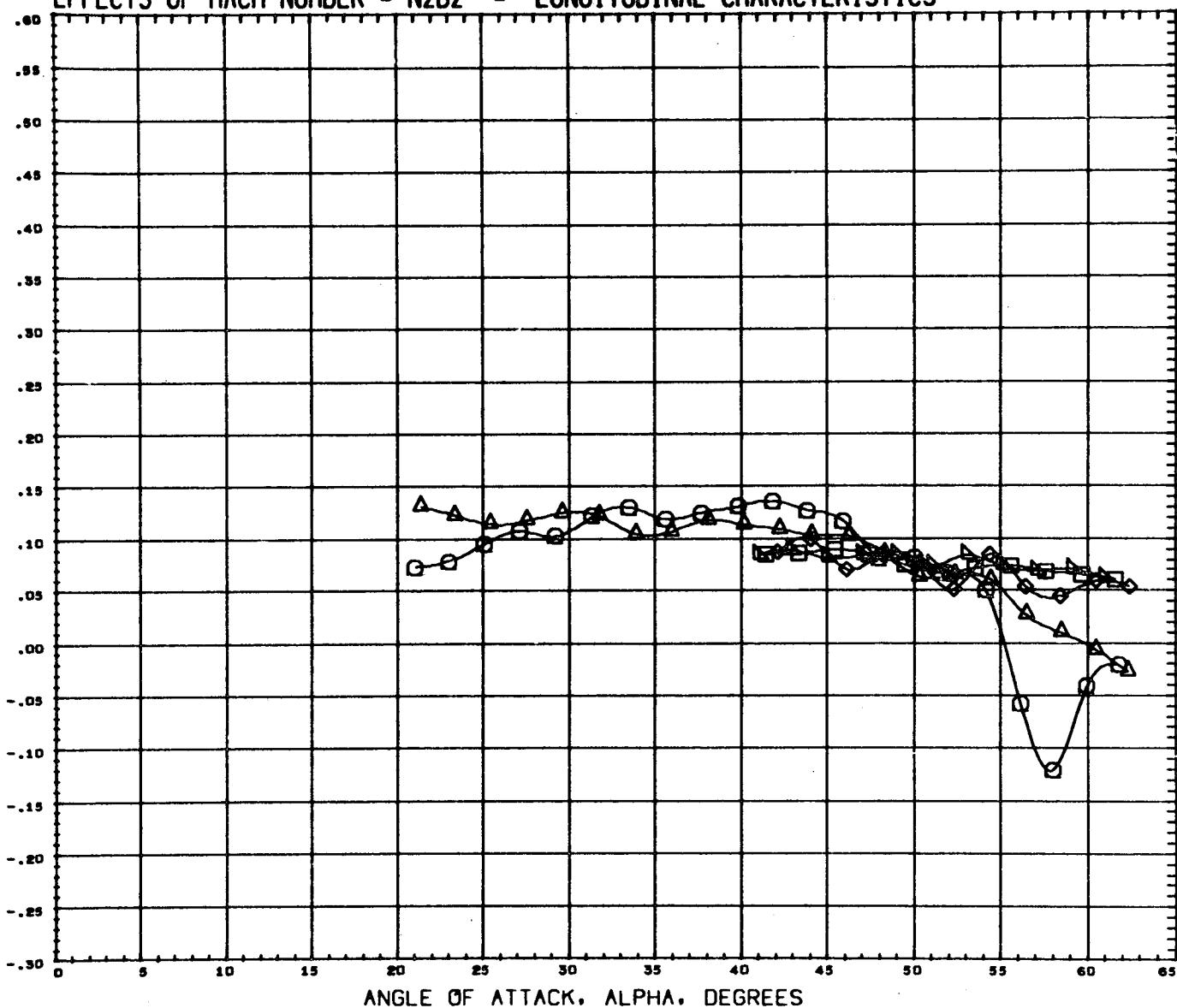
MSFC 518 PRESS FED BOOSTER CONFIG X N2B2

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EFFECTS OF MACH NUMBER - N2B2 - LONGITUDINAL CHARACTERISTICS

LOCAL NORMAL FORCE COEFFICIENT SLOPE, CN/A, PER DEGREE



SYMBOL MACH
 □ 0.901
 △ 1.199
 ▲ 1.964
 ▽ 2.740
 × 4.959

PARAMETRIC VALUES
 BETA 0.000
 DATA HIST. CODE MSTV*E*G

REFERENCE INFORMATION
 SREF 2.1590 SQ.IN.
 LREF 5.8590 IN.
 BREF 5.8590 IN.
 XNRP 3.5150 IN.
 YNRP 0.0000 IN.
 ZNRP 0.0000 IN.
 SCALE 0.0034

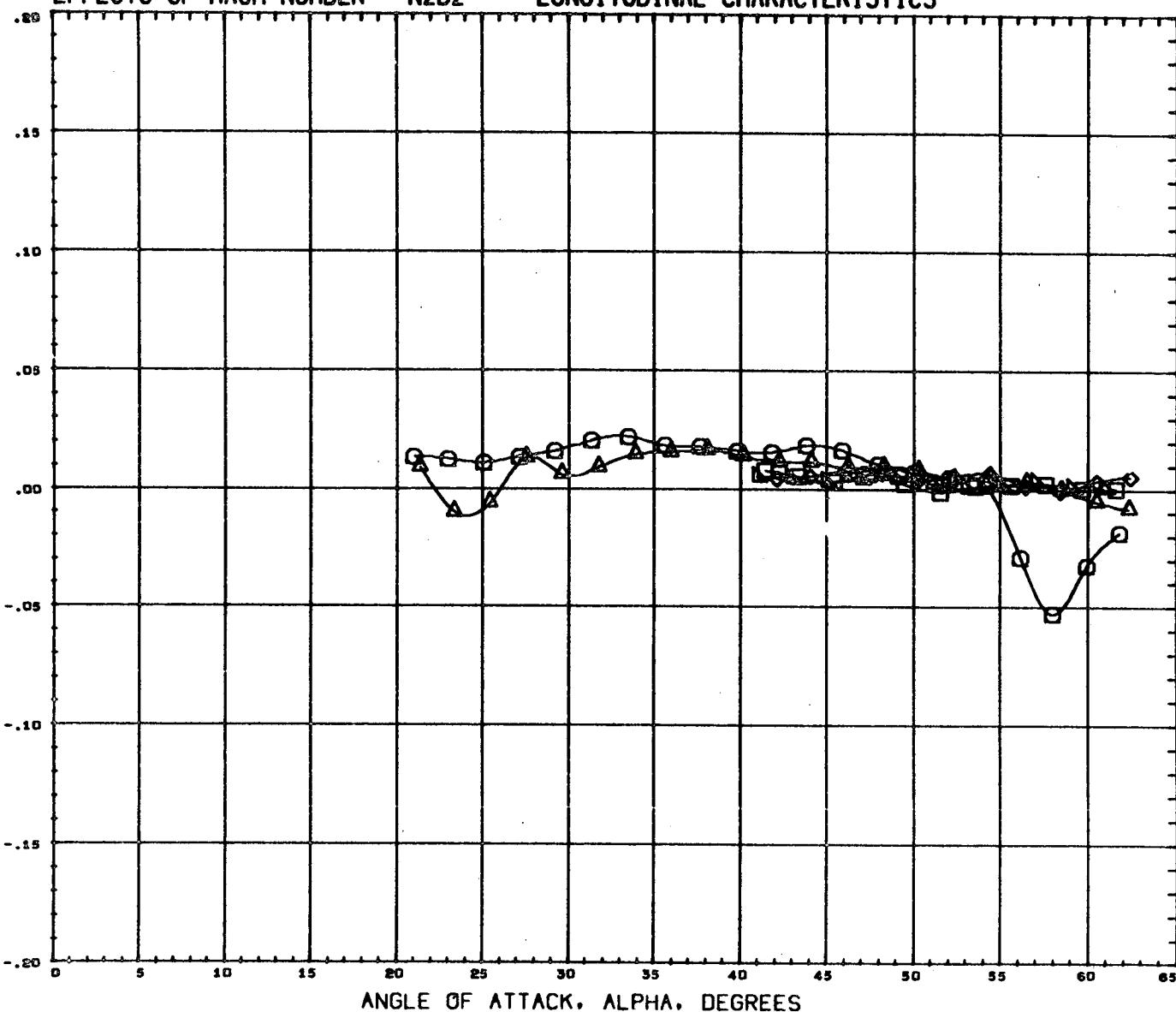
MSFC 518 PRESS FED BOOSTER CONFIG X N2B2

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EFFECTS OF MACH NUMBER - N2B2 - LONGITUDINAL CHARACTERISTICS

LOCAL PITCHING MOMENT COEFFICIENT SLOPE, CLM/A, PER DEGREE



SYMBOL MACH
 □ 0.901 BETA 0.000
 △ 1.199
 ▲ 1.964
 ▽ 2.740
 × 4.959

PARAMETRIC VALUES
 DATA MIST. CODE MSTV*E*G

REFERENCE INFORMATION		
SREF	2.1590	SG. IN.
LREF	5.8590	IN.
BREF	5.8590	IN.
XHMP	3.5150	IN.
YHMP	0.0000	IN.
ZHMP	0.0000	IN.
SCALE	0.0034	

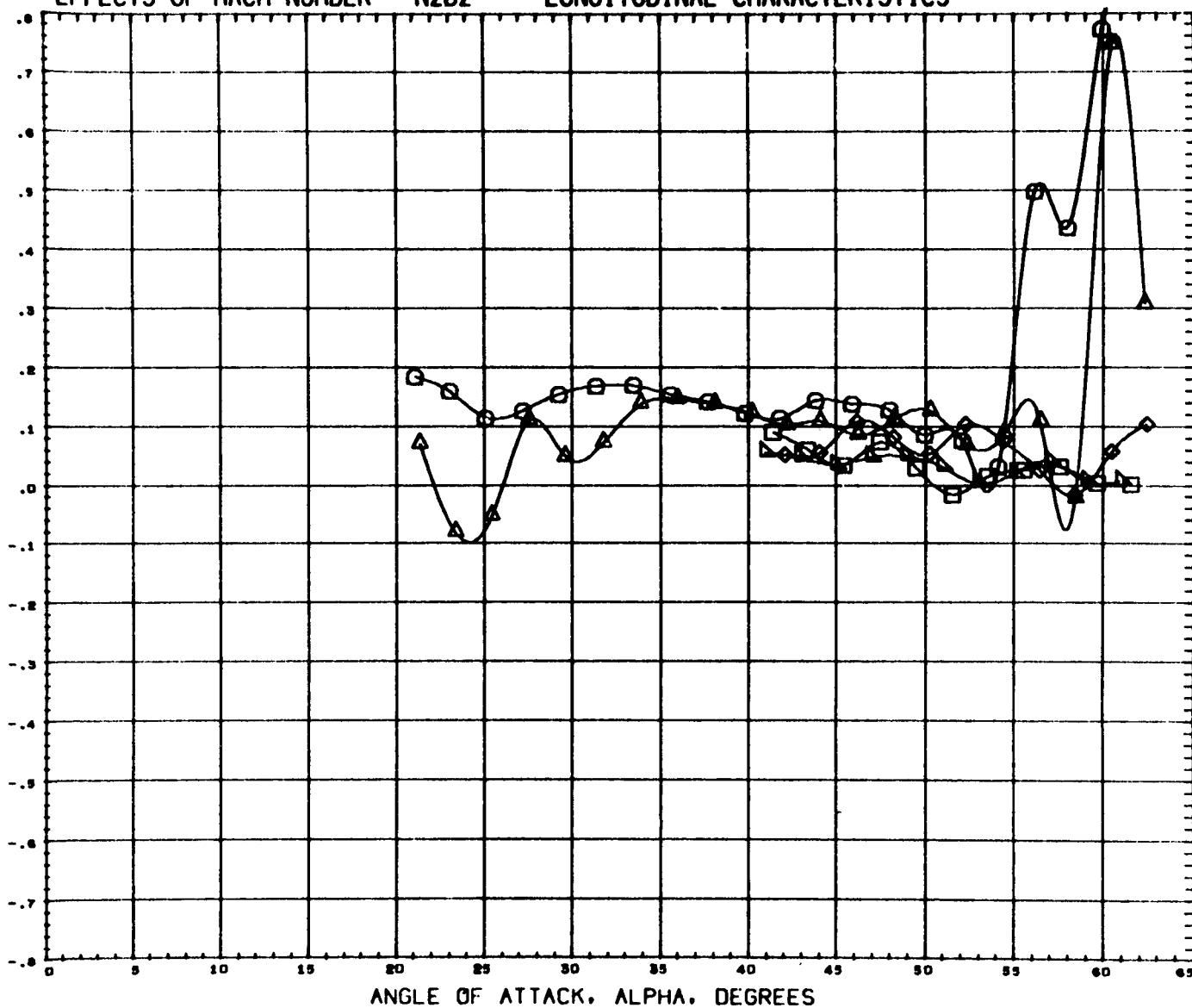
MSFC 518 PRESS FED BOOSTER CONFIG X N2B2

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EFFECTS OF MACH NUMBER - N2B2 - LONGITUDINAL CHARACTERISTICS

LOCAL CENTER OF PRESSURE, XAC = CLM/A / CN/A

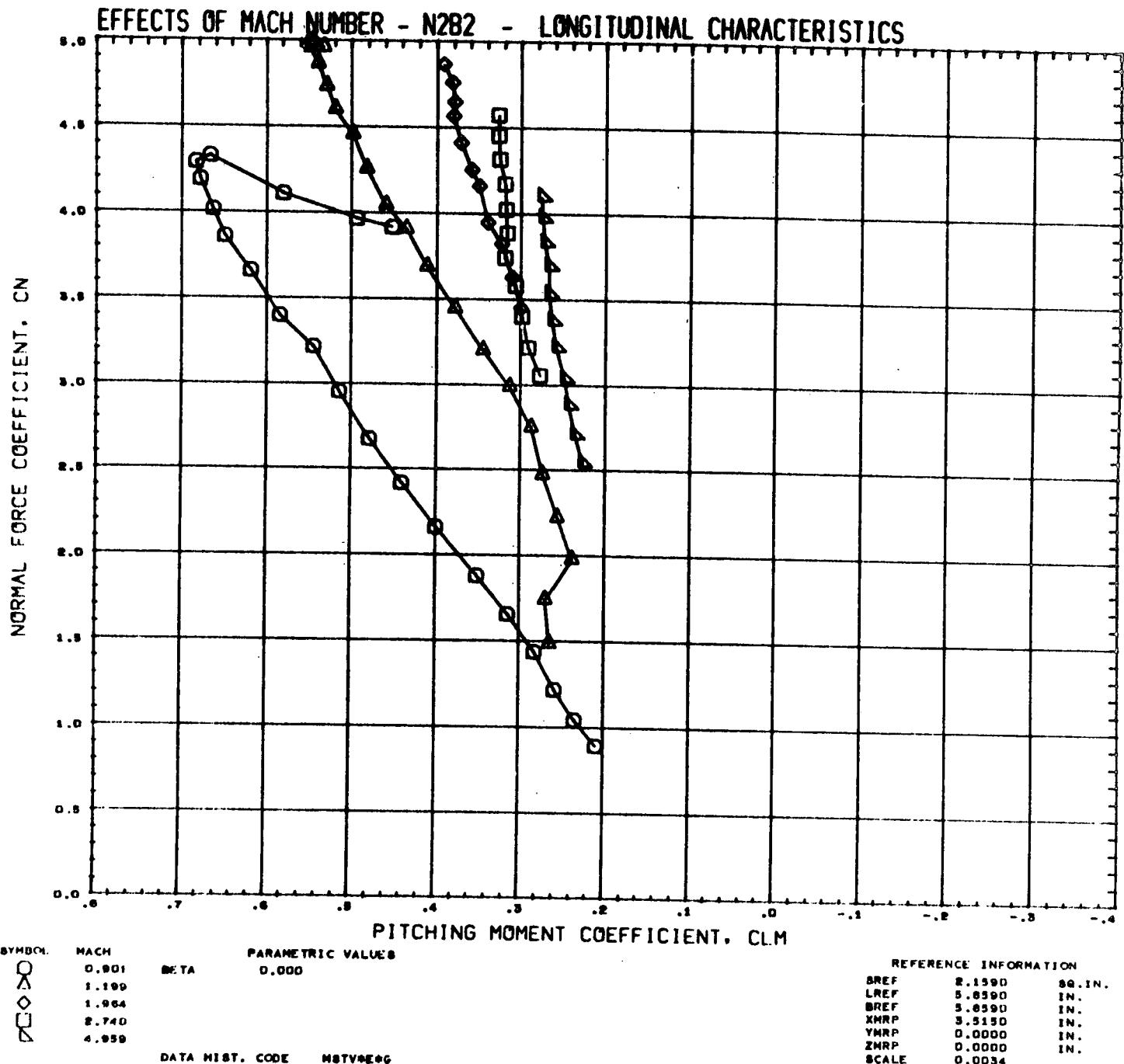


SYMBOL

MACH	PARAMETRIC VALUES
0.901	BETA
1.199	0.000
1.364	
2.740	
4.959	

DATA MIST. CODE MGGCAG

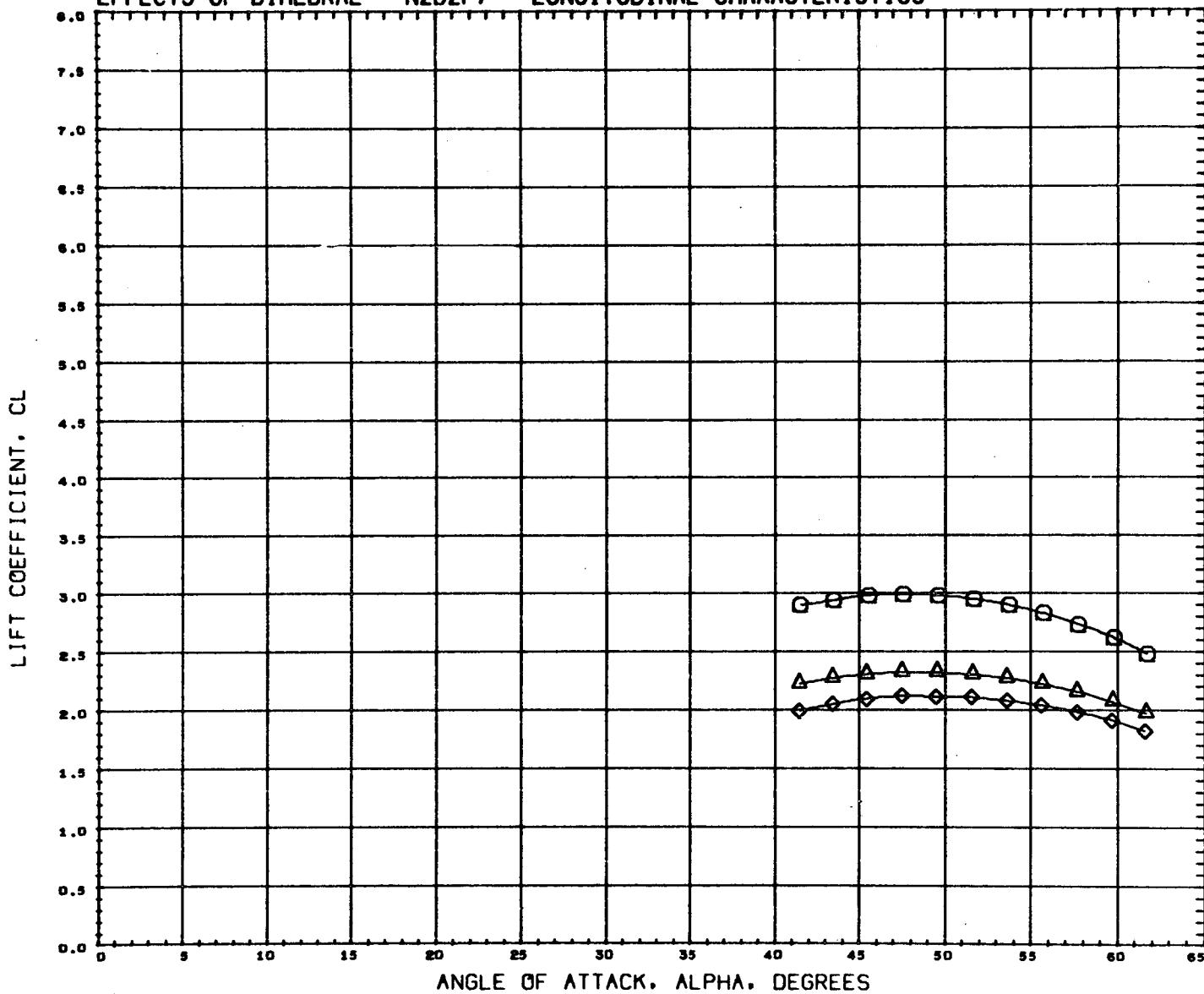
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LREF	5.8590	IN.
BREF	5.8590	IN.
XMRP	3.5150	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	



MSFC 518 PRESS FED BOOSTER CONFIG X N2B2

(154929) 22 DEC 71 PAGE 192

EFFECTS OF DIHEDRAL - N2B2F7 - LONGITUDINAL CHARACTERISTICS



DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (K54035) Q MSFC 518 PRESS FED BOOSTER CONFIG X N2B2F7
 (K54033) A MSFC 518 PRESS FED BOOSTER CONFIG X N2B2F7
 (K54031) D MSFC 518 PRESS FED BOOSTER CONFIG X N2B2F7

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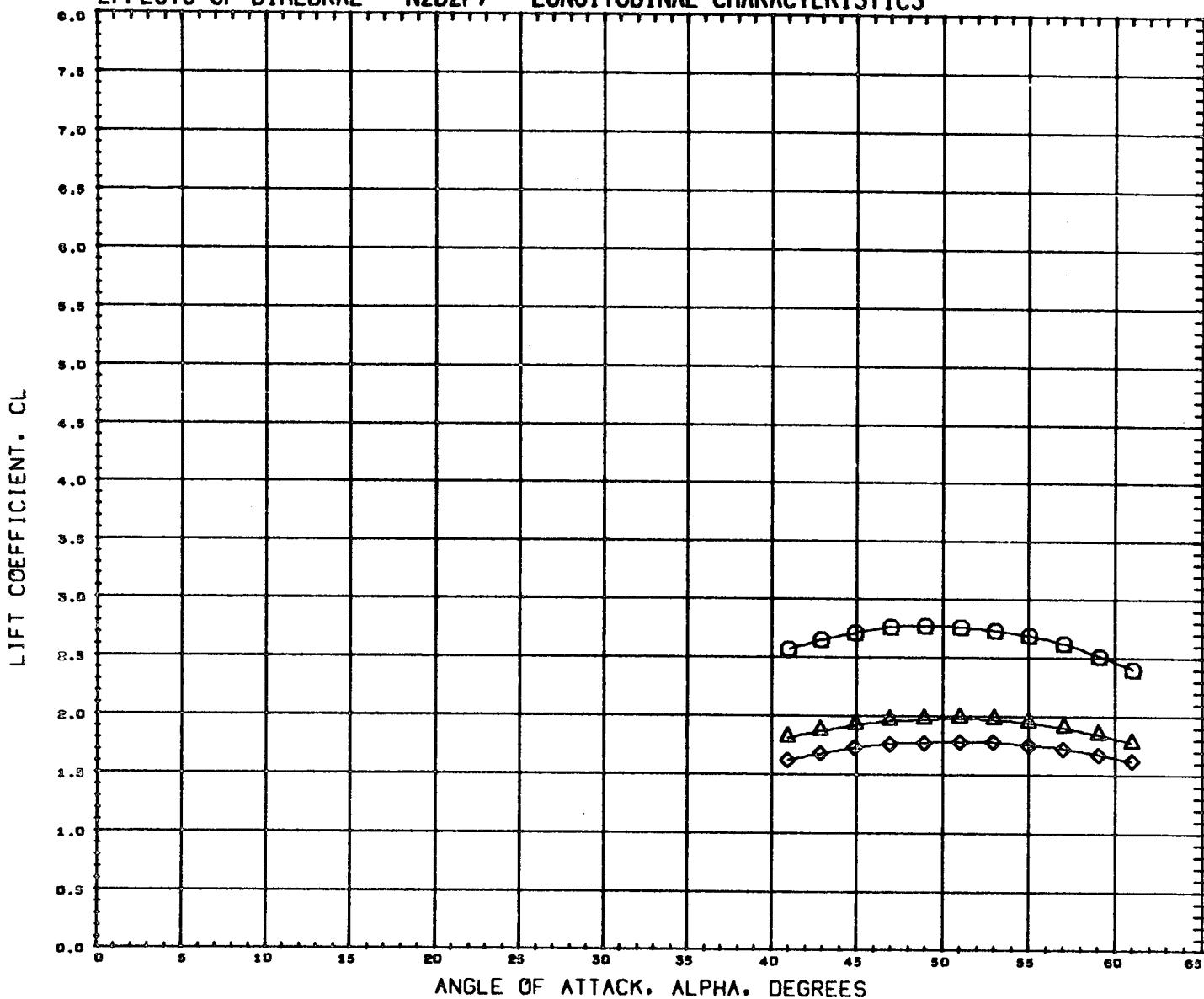
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 BREF 5.8590 IN.
 XMRP 3.5150 IN.
 YMRP 0.0000 IN.
 ZMRP 0.0000 IN.
 SCALE 0.0034

MACH 2.740

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EFFECTS OF DIHEDRAL - N2B2F7 - LONGITUDINAL CHARACTERISTICS



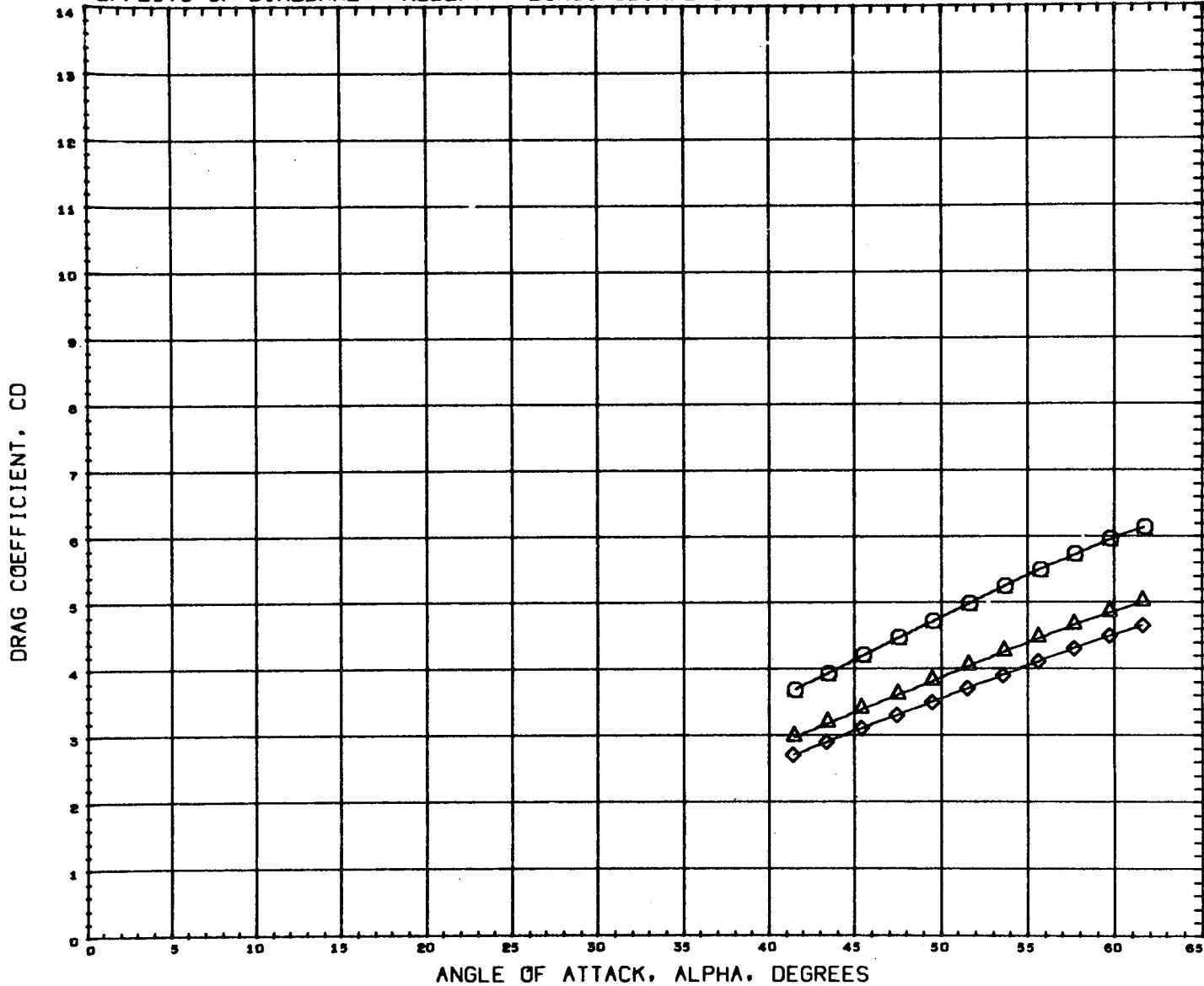
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 (HS4033) MSFC 510 PRESS FED BOOSTER CONFIG X N2B2F7
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BETA DIHDRL
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 0.000 45.000

REFERENCE INFORMATION
 SREF 2.1590 SG. IN.
 LREF 5.8590 IN.
 BREF 5.8590 IN.
 XMRP 3.5150 IN.
 YMRP 0.0000 IN.
 ZMRP 0.0000 IN.
 SCALE 0.0034

MACH 4.959

EFFECTS OF DIHEDRAL - N2B2F7 - LONGITUDINAL CHARACTERISTICS



DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (H54035) MSFC 518 PRESS FED BOOSTER CONFIG X N2B2F7
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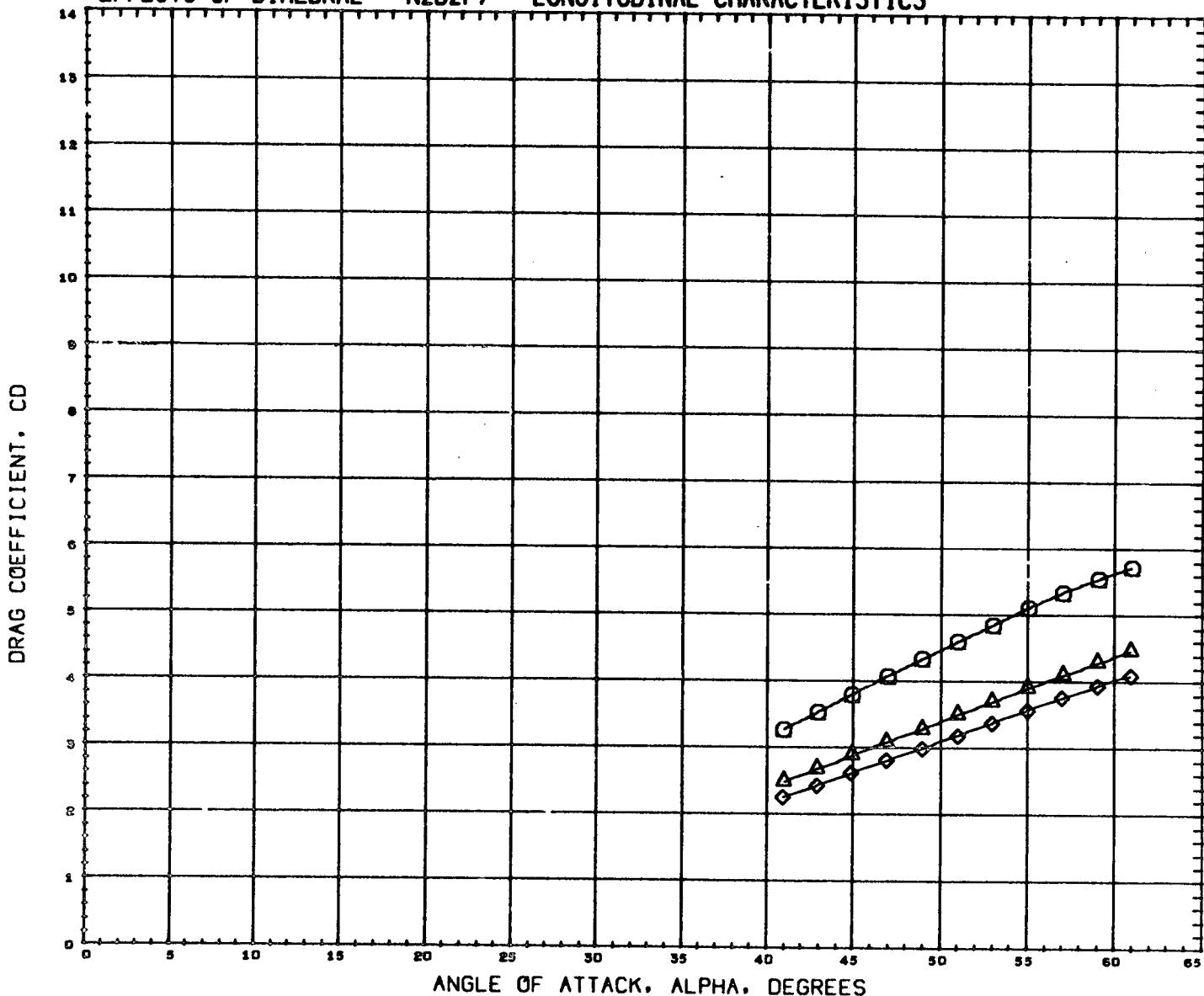
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 BREF 5.8590 IN.
 XMRF 3.5150 IN.
 YMRF 0.0000 IN.
 ZMRF 0.0000 IN.
 SCALE 0.0034

MACH 2.740

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EFFECTS OF DIHEDRAL - N2B2F7 - LONGITUDINAL CHARACTERISTICS



DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (HS4035) MSFC 518 PRESS FED BOOSTER CONFIG X N2B2F7
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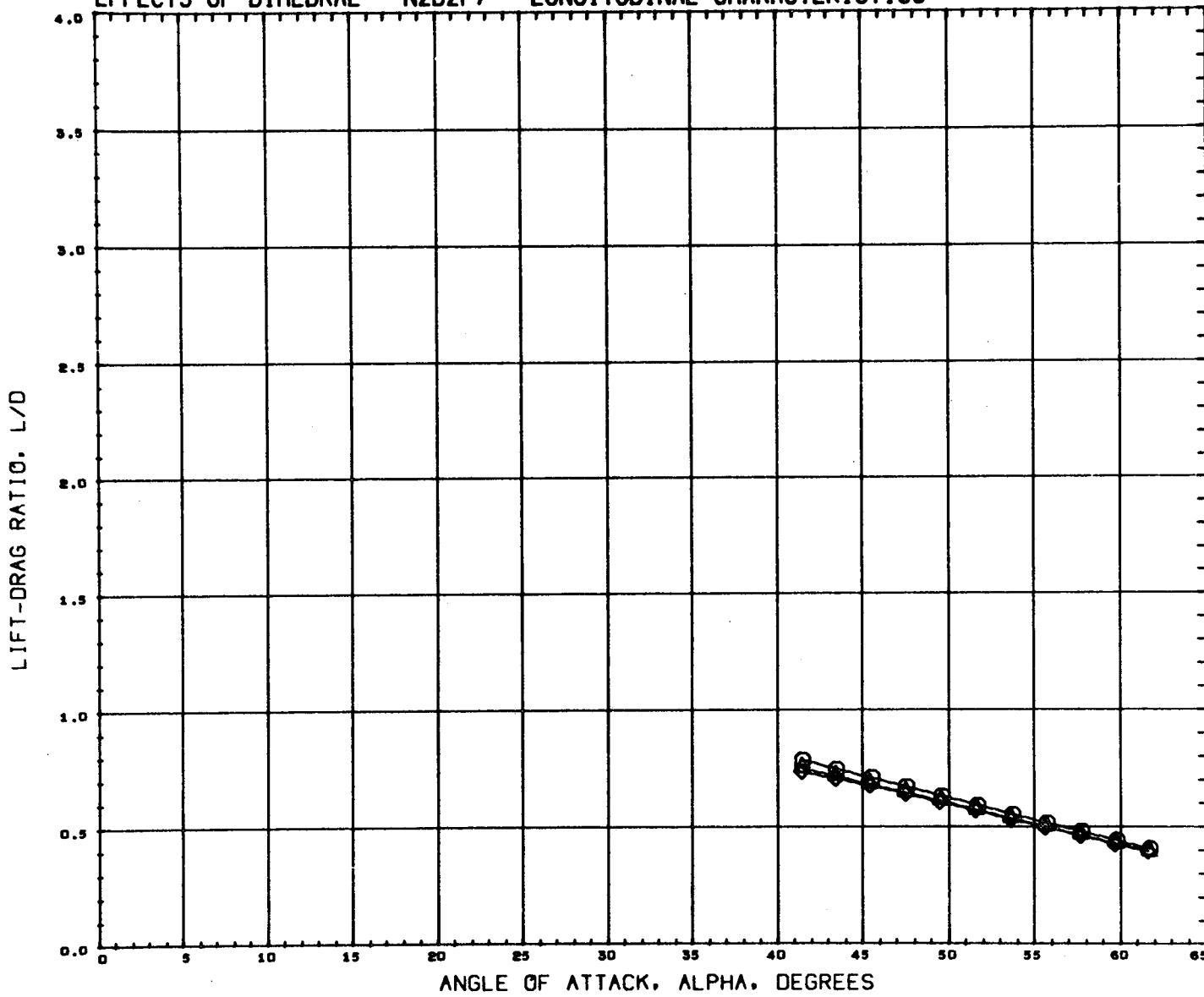
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 YMNP 0.0000 IN.
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 SCALE 0.0034

MACH 4.959

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EFFECTS OF DIHEDRAL - N2B2F7 - LONGITUDINAL CHARACTERISTICS



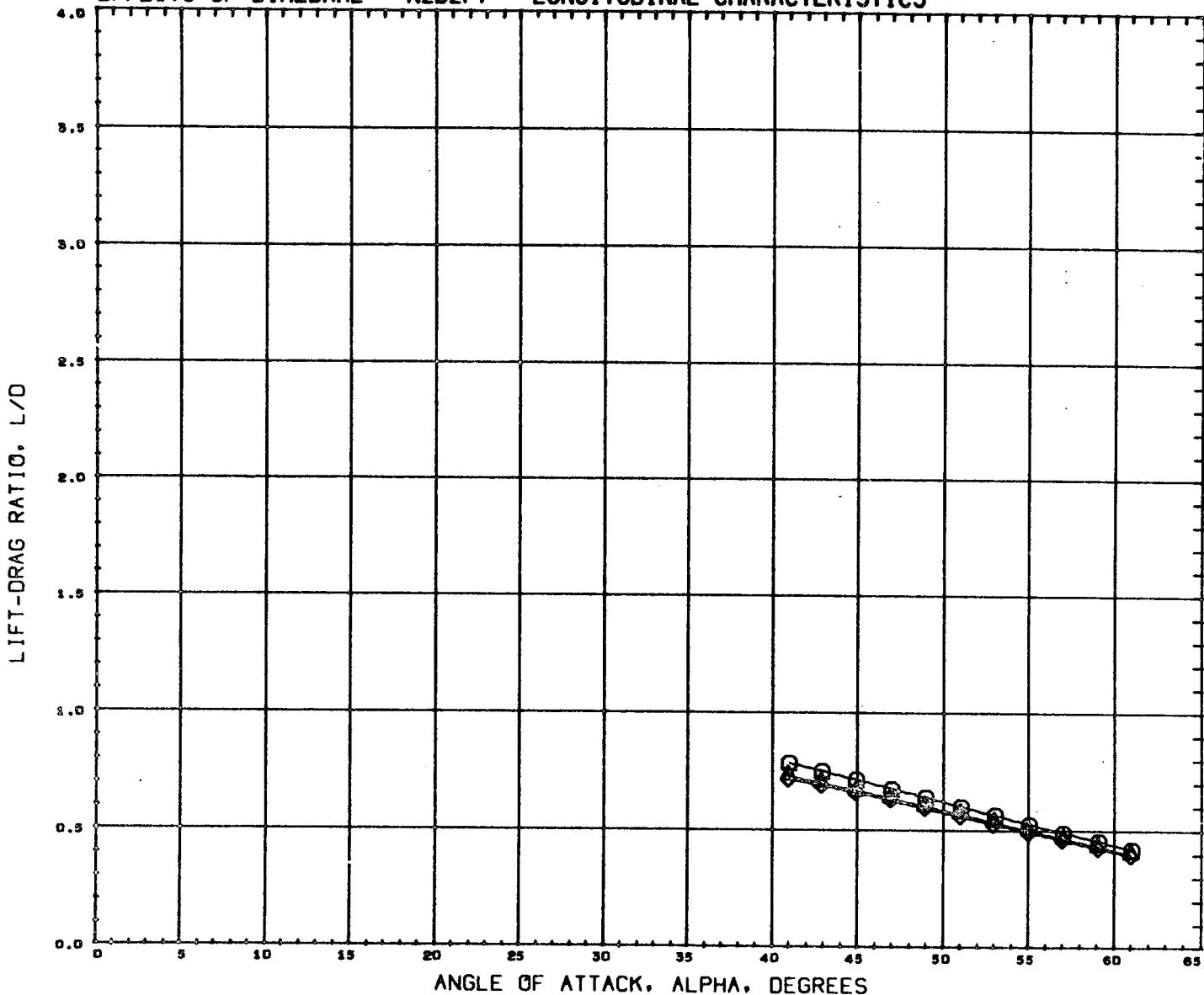
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BETA DIHDRL
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REFERENCE INFORMATION
 SREF 2.1590 SQ.IN.
 LREF 5.8590 IN.
 BREF 5.8590 IN.
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 YNRP 0.0000 IN.
 ZNRP 0.0000 IN.
 SCALE 0.0034

MACH 2.740

EFFECTS OF DIHEDRAL - N2B2F7 - LONGITUDINAL CHARACTERISTICS



DATA SET SYMBOL CONFIGURATION DESCRIPTION

(HS4033) MSFC 510 PRESS FED BOOSTER CONFIG X N2B2F7
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BETA DIHDRL

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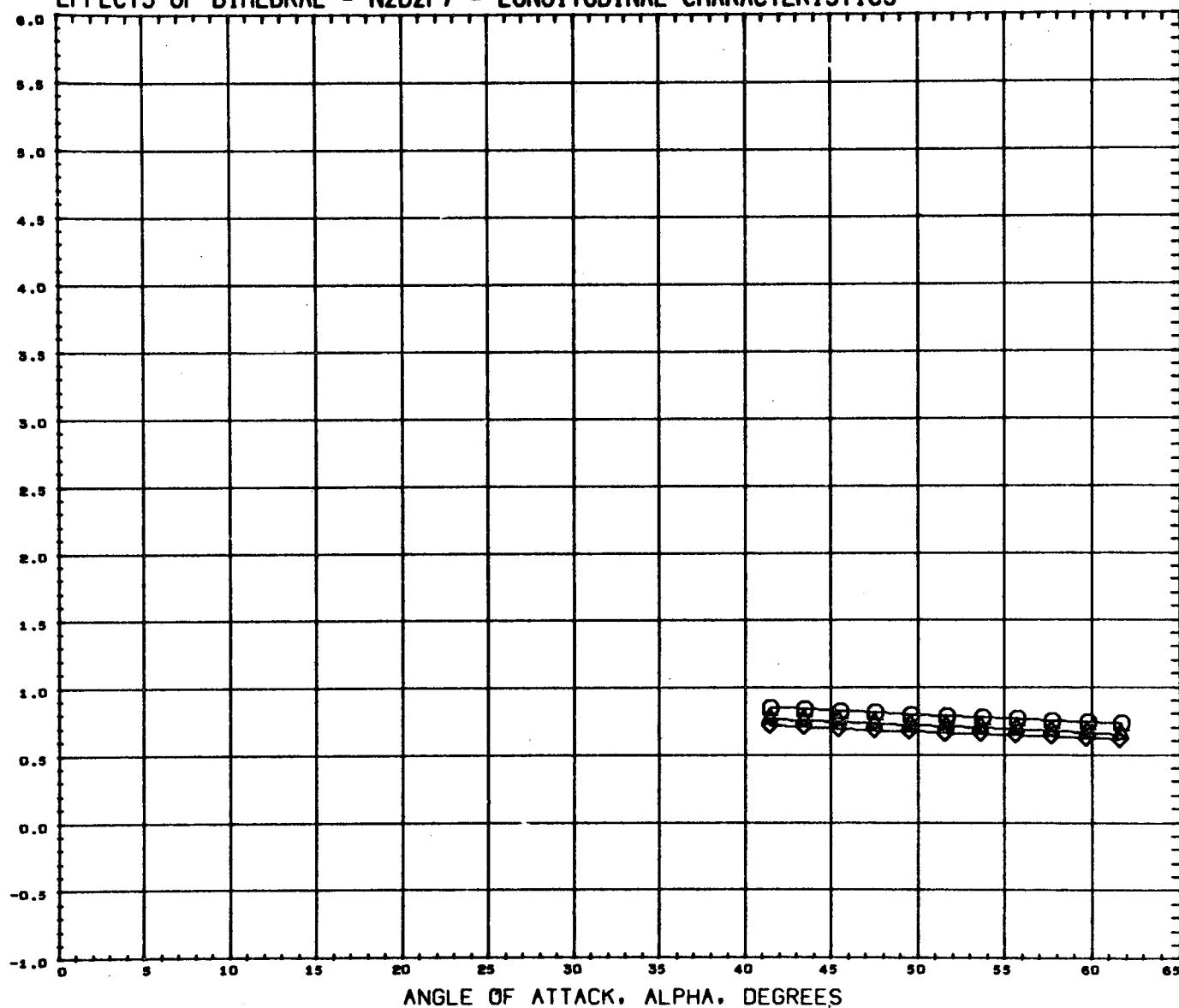
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 ZHRP 0.0000 IN.
 SCALE 0.0034

MACH 4.959

EFFECTS OF DIHEDRAL - N2B2F7 - LONGITUDINAL CHARACTERISTICS

AXIAL FORCE COEFFICIENT, CA



DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (H54035) Q MSFC 518 PRESS FED BOOSTER CONFIG X N2B2F7
 (K54033) A MSFC 518 PRESS FED BOOSTER CONFIG X N2B2F7
 (H54031) D MSFC 518 PRESS FED BOOSTER CONFIG X N2B2F7

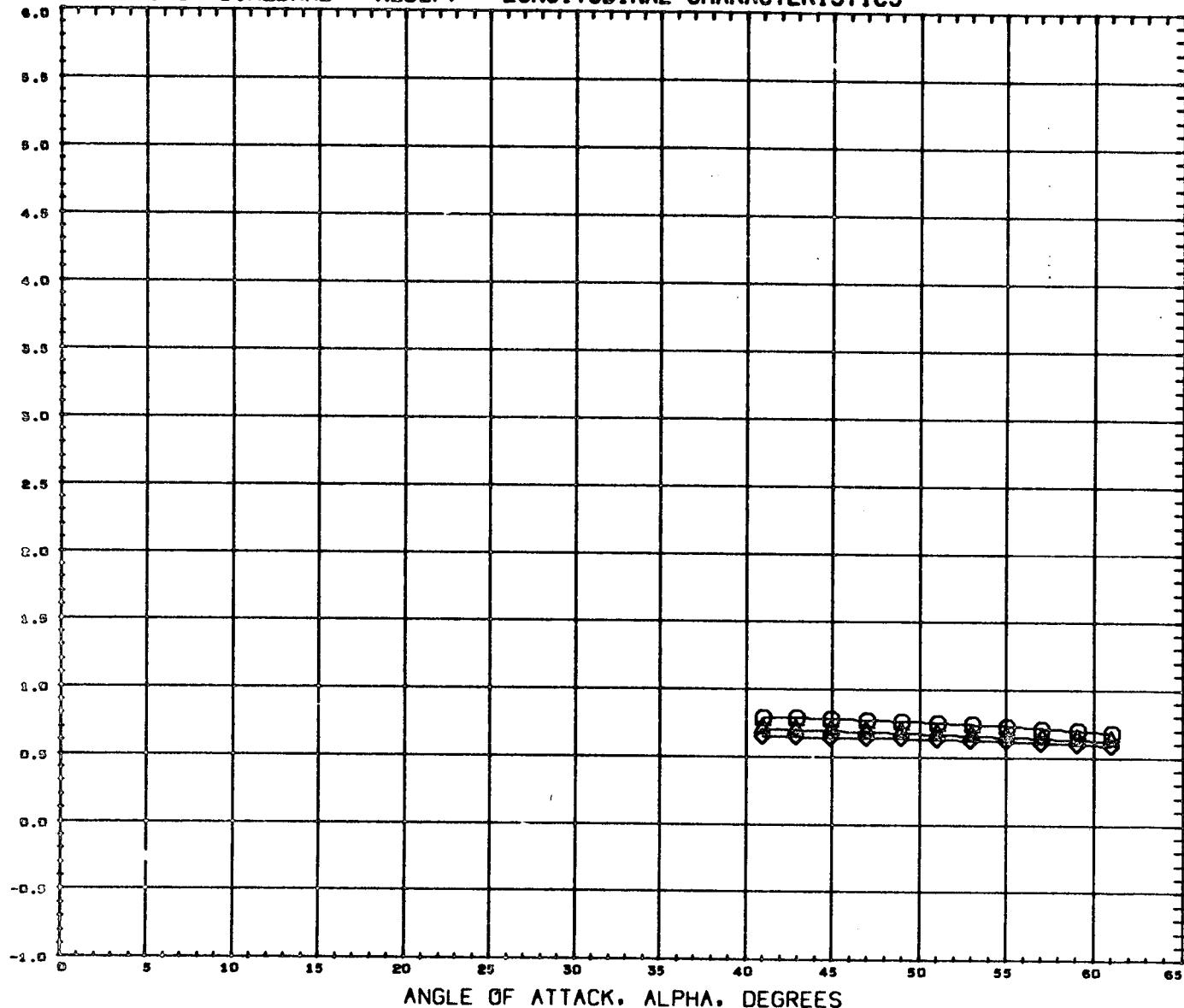
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 YMRF 0.0000 IN.
 ZMRF 0.0000 IN.
 SCALE 0.0034

MACH 2.740

EFFECTS OF DIHEDRAL - N2B2F7 - LONGITUDINAL CHARACTERISTICS

AXIAL FORCE COEFFICIENT, CA



DATA SET SYMBOL CONFIGURATION DESCRIPTION

(MS4095) Q MSFC 518 PRESS FED BOOSTER CONFIG X N2B2F7
 (MS4096) A MSFC 518 PRESS FED BOOSTER CONFIG X N2B2F7
 (MS4097) D MSFC 519 PRESS FED BOOSTER CONFIG X N2B2F7

BETA DIHDRL

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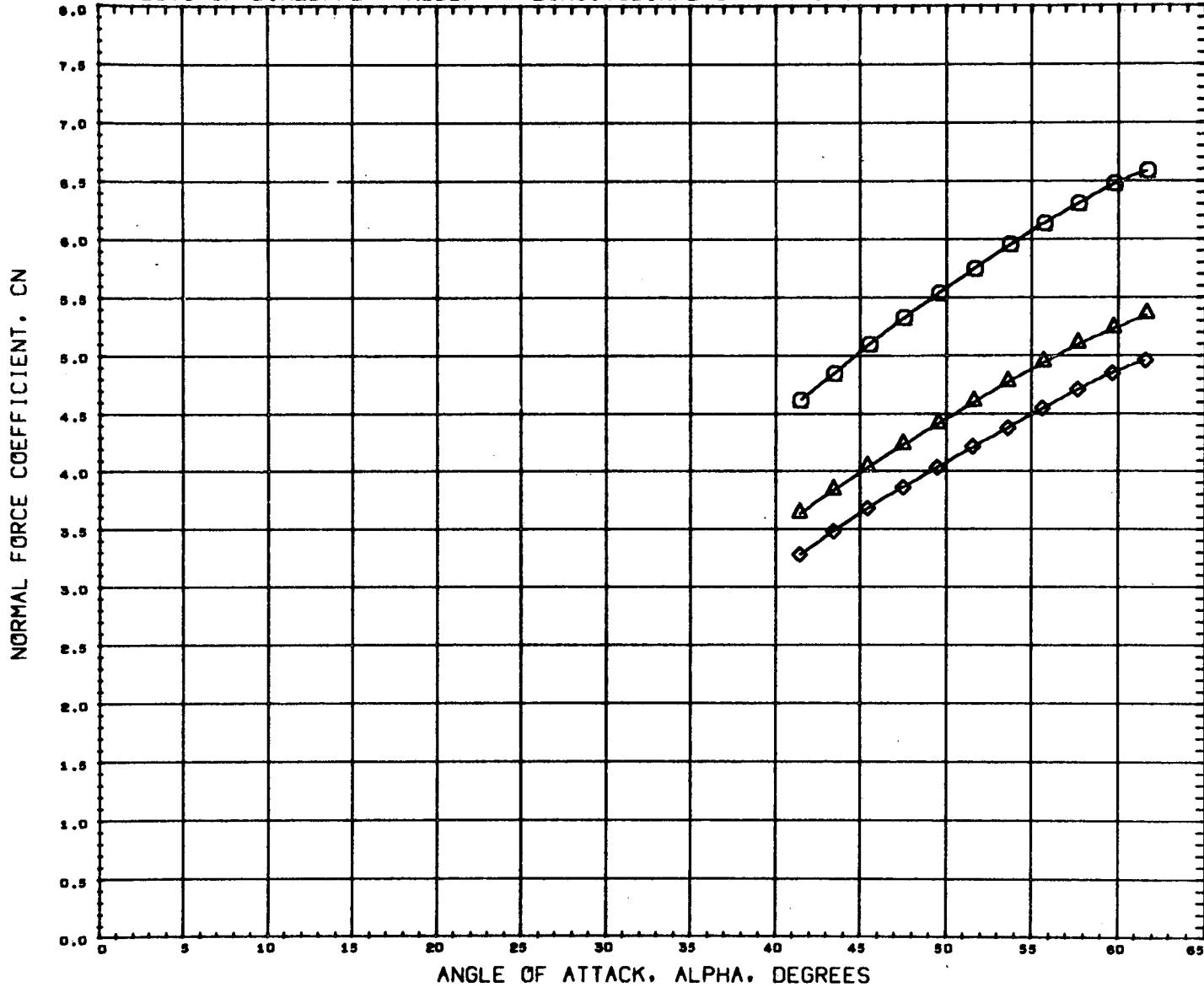
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 ZMRP 0.0000 IN.
 SCALE 0.0034

MACH 4.959

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EFFECTS OF DIHEDRAL - N2B2F7 - LONGITUDINAL CHARACTERISTICS



DATA SET SYMBOL CONFIGURATION DESCRIPTION

(H54035) MSFC 518 PRESS FED BOOSTER CONFIG X N2B2F7
 (K54033) MSFC 518 PRESS FED BOOSTER CONFIG X N2B2F7
 (H54031) MSFC 518 PRESS FED BOOSTER CONFIG X N2B2F7

BETA DIHDL

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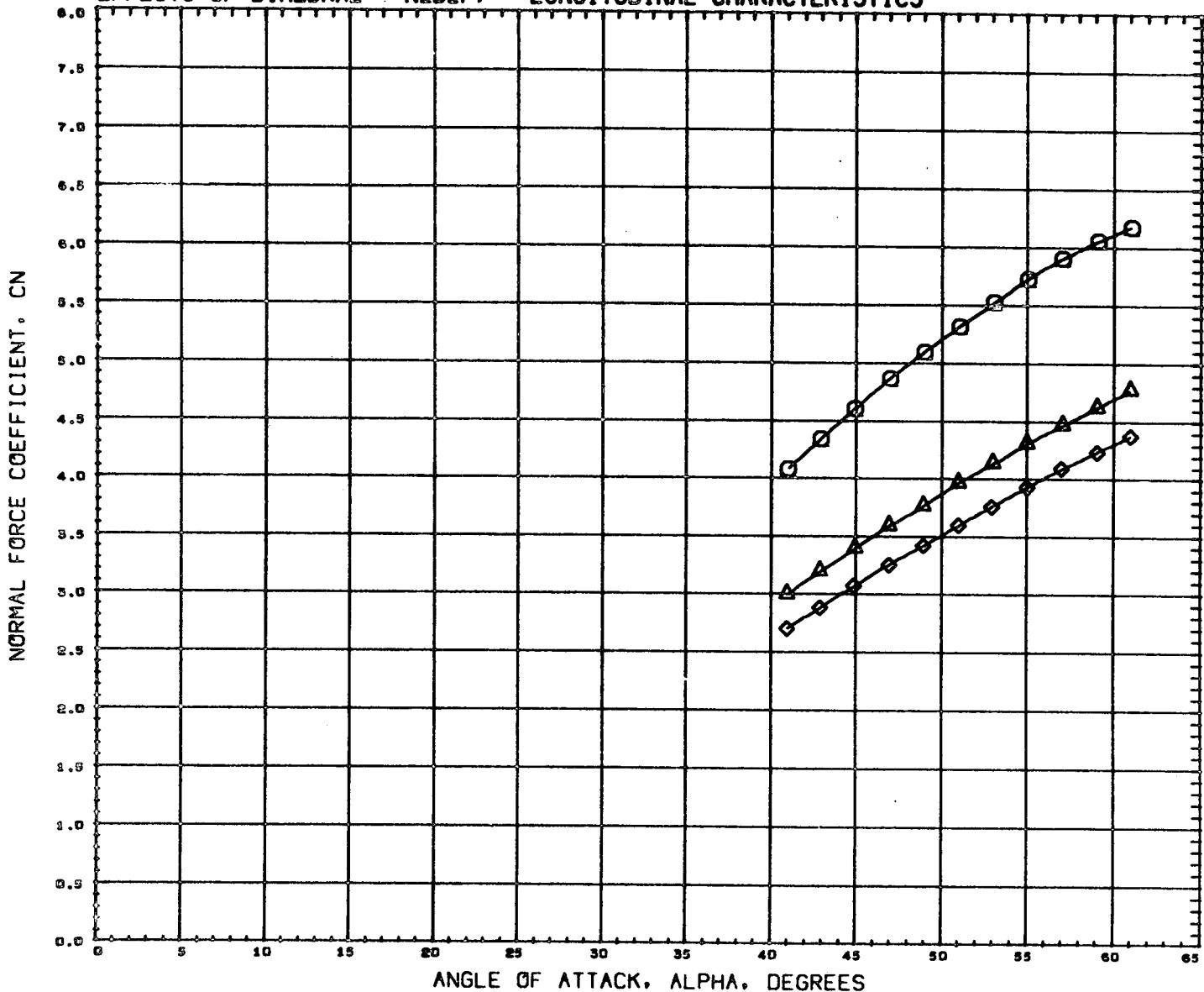
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 YMNP 0.0000 IN.
 ZMNP 0.0000 IN.
 SCALE 0.0034

MACH 2.740

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EFFECTS OF DIHEDRAL - N2B2F7 - LONGITUDINAL CHARACTERISTICS



DATA SET SYMBOL CONFIGURATION DESCRIPTION

(R54035) MSFC 518 PRESS FED BOOSTER CONFIG X N2B2F7
 (R54033) MSFC 518 PRESS FED BOOSTER CONFIG X N2B2F7
 (R54031) MSFC 518 PRESS FED BOOSTER CONFIG X N2B2F7

BETA DIHDL

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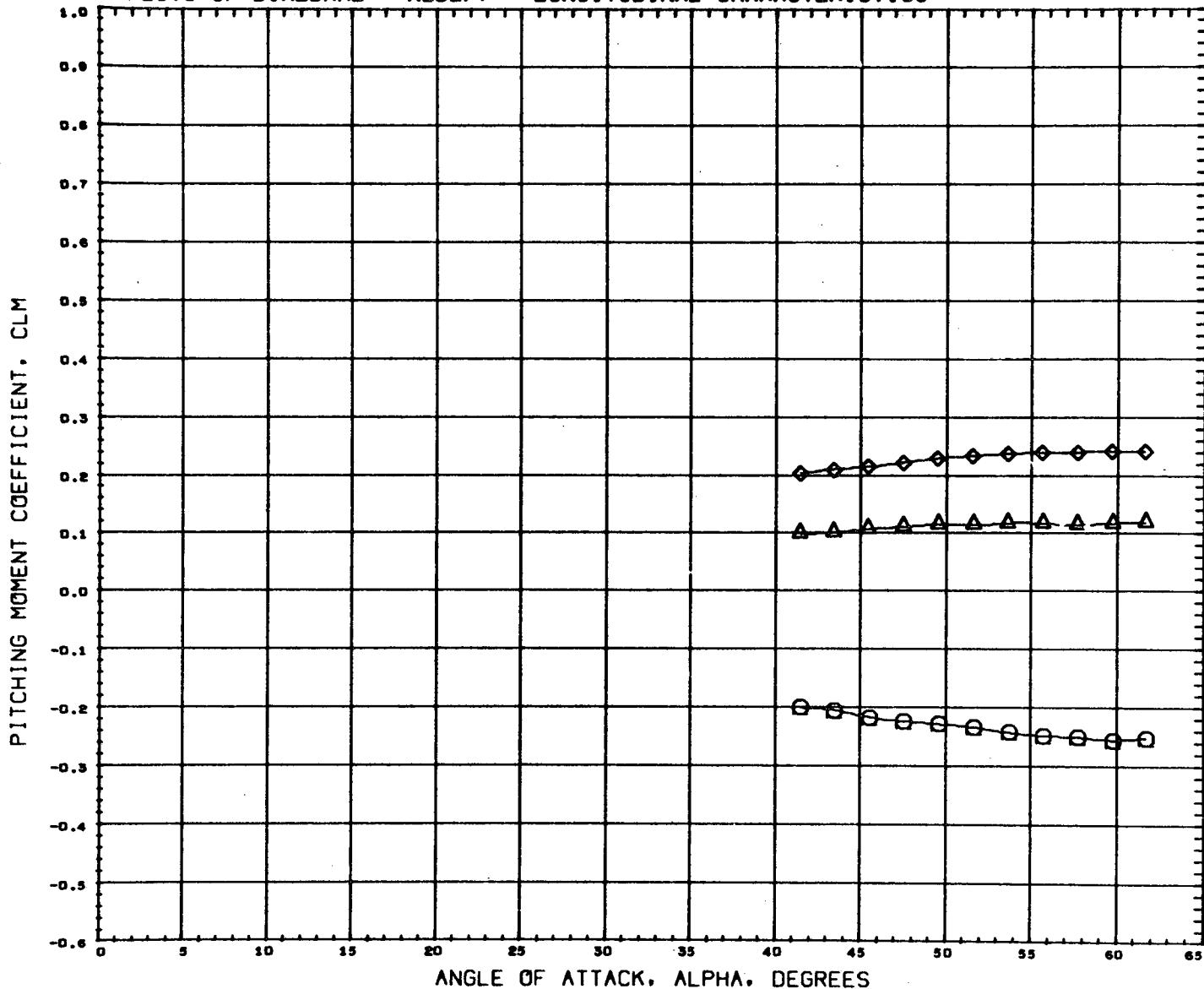
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 SCALE 0.0034

MACH 4.959

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EFFECTS OF DIHEDRAL - N2B2F7 - LONGITUDINAL CHARACTERISTICS



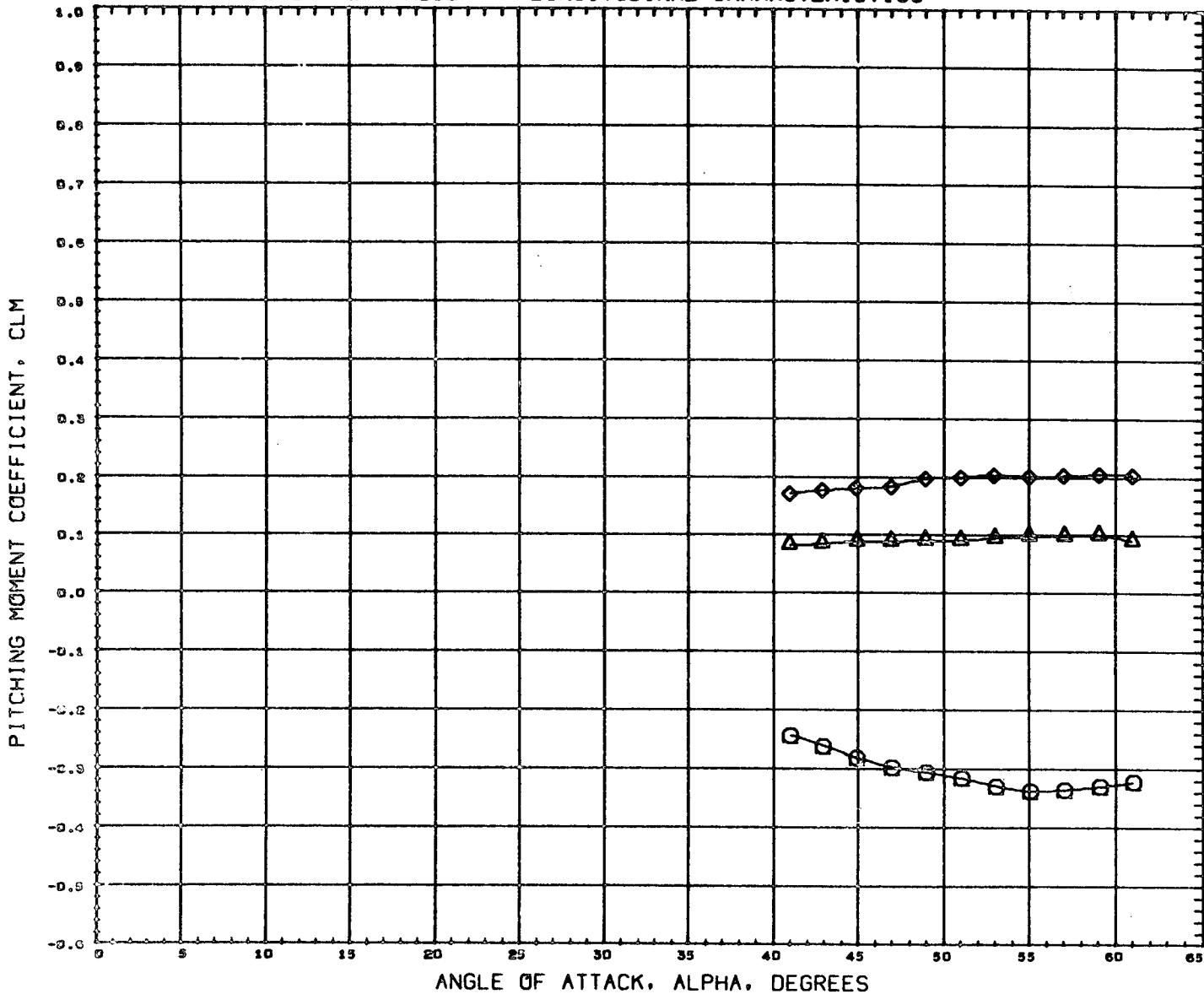
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 (HS4031) MSFC 518 PRESS FED BOOSTER CONFIG X N2B2F7

BETA DHDRL
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 0.000 45.000

REFERENCE INFORMATION
 SREF 2.1590 SQ.IN.
 LREF 5.8590 IN.
 BREF 5.8590 IN.
 XMNP 3.5150 IN.
 YMNP 0.0000 IN.
 ZMNP 0.0000 IN.
 SCALE 0.0034

MACH 2.740

EFFECTS OF DIHEDRAL - N2B2F7 - LONGITUDINAL CHARACTERISTICS



DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (NS4055) MSFC 510 PRESS FED BOOSTER CONFIG X N2B2F7
 (NS4052) MSFC 510 PRESS FED BOOSTER CONFIG X N2B2F7
 (NS4051) MSFC 510 PRESS FED BOOSTER CONFIG X N2B2F7

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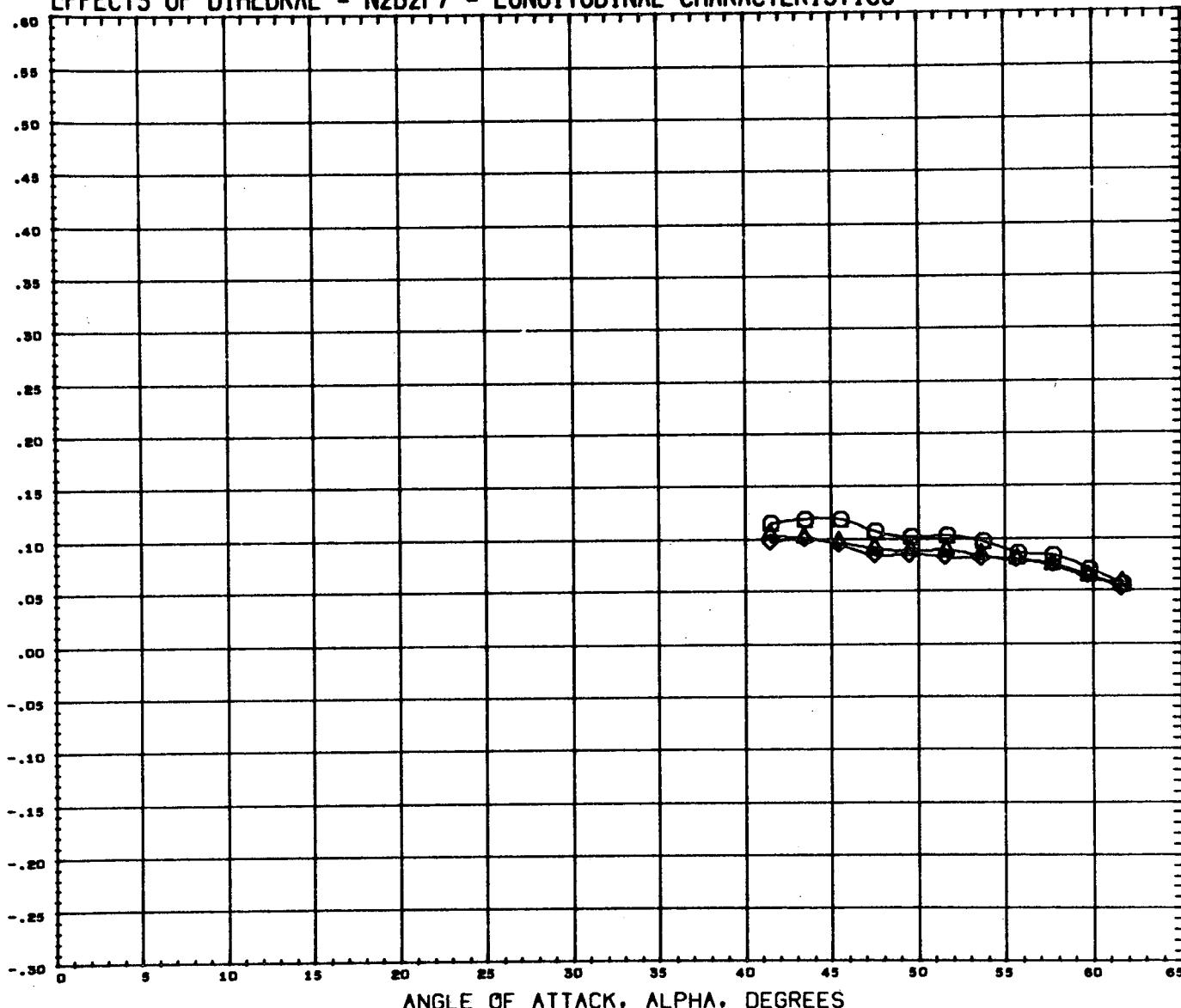
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 BREF 5.8590 IN.
 XMRP 3.5150 IN.
 YMRP 0.0000 IN.
 ZMRP 0.0000 IN.
 SCALE 0.0034

MACH 4.959

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LOCAL NORMAL FORCE COEFFICIENT SLOPE, CN/A. PER DEGREE

EFFECTS OF DIHEDRAL - N2B2F7 - LONGITUDINAL CHARACTERISTICS



DATA SET SYMBOL CONFIGURATION DESCRIPTION

(HS4035) MSFC 518 PRESS FED BOOSTER CONFIG X N2B2F7
 (HS4033) MSFC 518 PRESS FED BOOSTER CONFIG X N2B2F7
 (HS4031) MSFC 518 PRESS FED BOOSTER CONFIG X N2B2F7

BETA DIHDRL

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REFERENCE INFORMATION

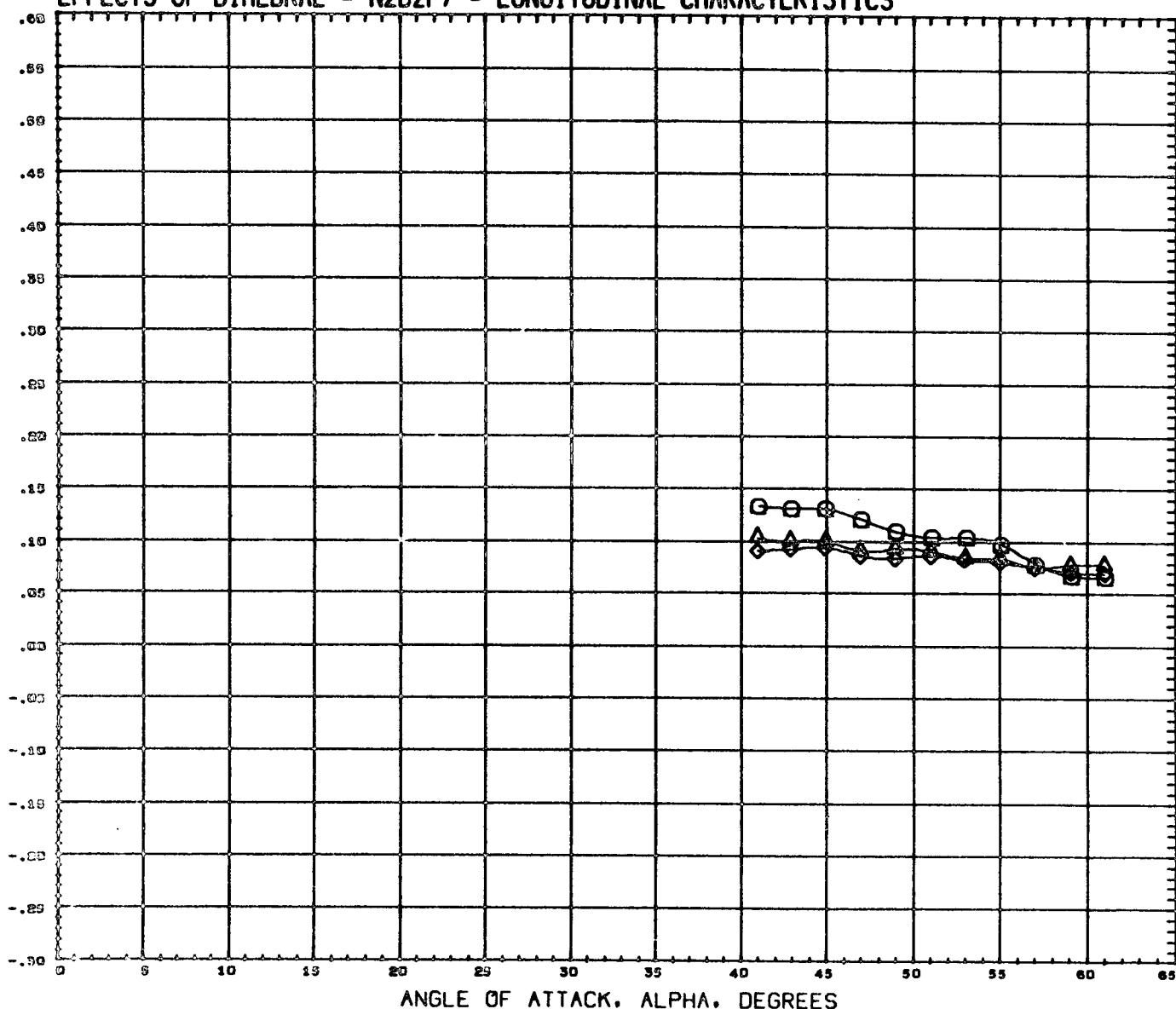
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 BREF 5.8590 IN.
 XMRP 3.5150 IN.
 YMNP 0.0000 IN.
 ZMRP 0.0000 IN.
 SCALE 0.0034

MACH 2.740

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EFFECTS OF DIHEDRAL - N2B2F7 - LONGITUDINAL CHARACTERISTICS

LOCAL NORMAL FORCE COEFFICIENT SLOPE, CN/A, PER DEGREE



DATA SET SYMBOL CONFIGURATION DESCRIPTION

(H94095) Q MSFC 510 PRESS FED BOOSTER CONFIG X N2B2F7
 (H94095) D MSFC 510 PRESS FED BOOSTER CONFIG X N2B2F7
 (H94091) D MSFC 510 PRESS FED BOOSTER CONFIG X N2B2F7

BETA DIMDRL

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 0.000 30.000
 0.000 45.000

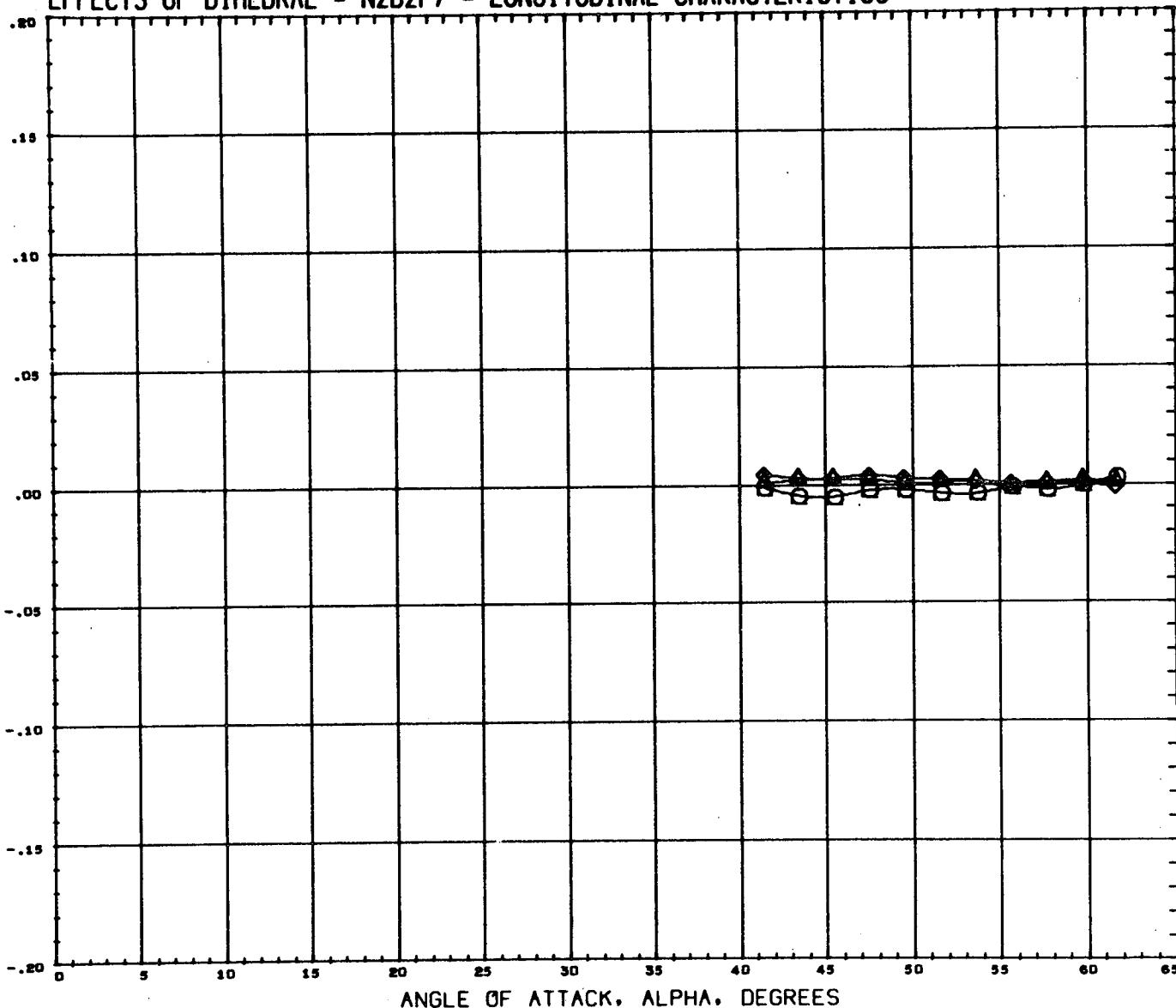
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 BREF 5.8590 IN.
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 YMRF 0.0000 IN.
 ZMRF 0.0000 IN.
 SCALE 0.0034

NACN 4.959

EFFECTS OF DIHEDRAL - N2B2F7 - LONGITUDINAL CHARACTERISTICS

LOCAL PITCHING MOMENT COEFFICIENT SLOPE, CLM/A, PER DEGREE



DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (H54035) MSFC 518 PRESS FED BOOSTER CONFIG X N2B2F7
 (K54033) MSFC 518 PRESS FED BOOSTER CONFIG X N2B2F7
 (H54031) MSFC 518 PRESS FED BOOSTER CONFIG X N2B2F7

BETA DIHDL
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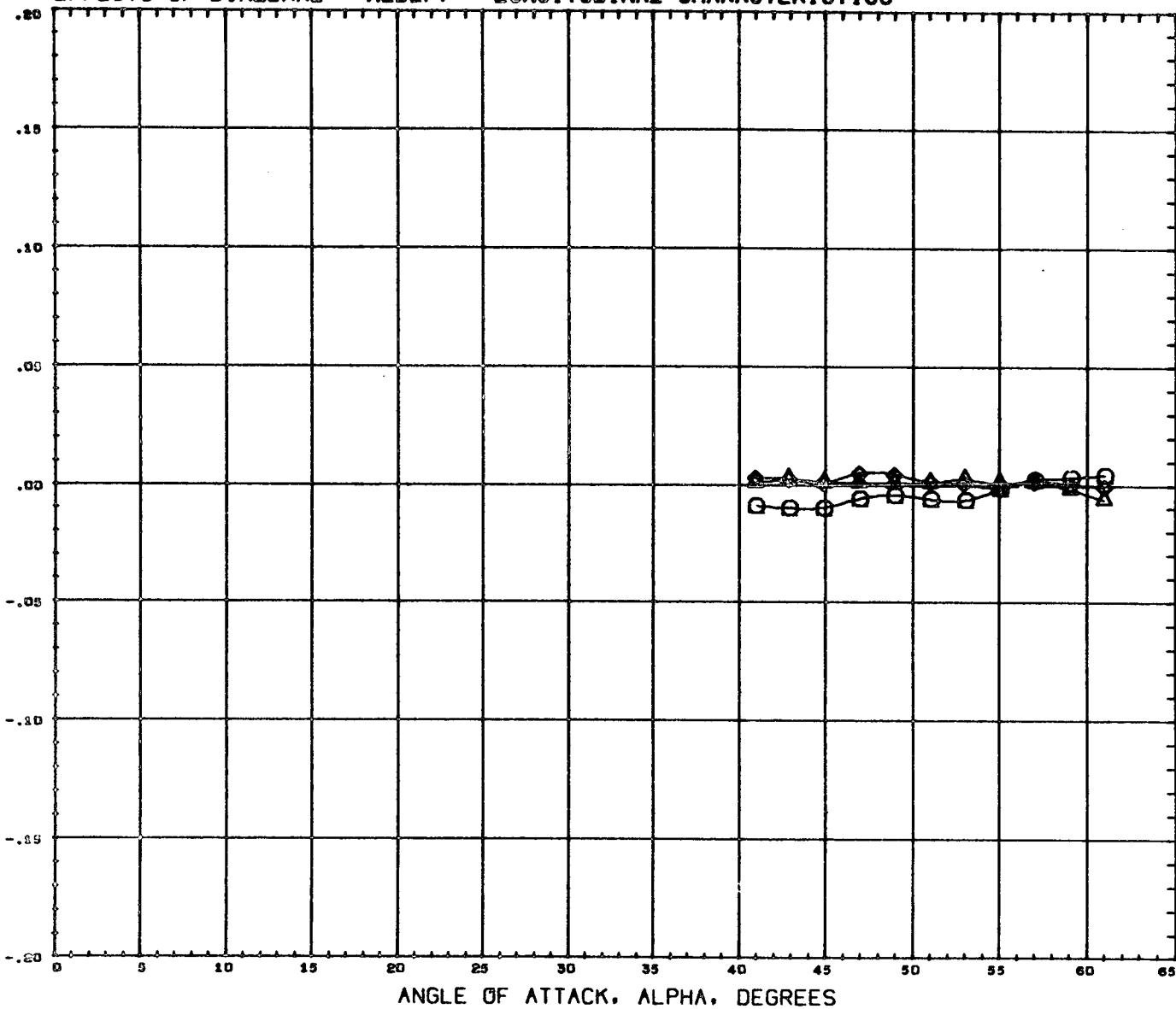
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 BREF 5.8590 IN.
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 YMMP 0.0000 IN.
 ZMMP 0.0000 IN.
 SCALE 0.0034

MACH 2.740

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EFFECTS OF DIHEDRAL - N2B2F7 - LONGITUDINAL CHARACTERISTICS

LOCAL PITCHING MOMENT COEFFICIENT SLOPE. CLM/A. PER DEGREE



DATA SET SYMBOL CONFIGURATION DESCRIPTION

(MSFC039) MSFC 518 PRESS FED BOOSTER CONFIG X N2B2F7
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BETA DIHDL

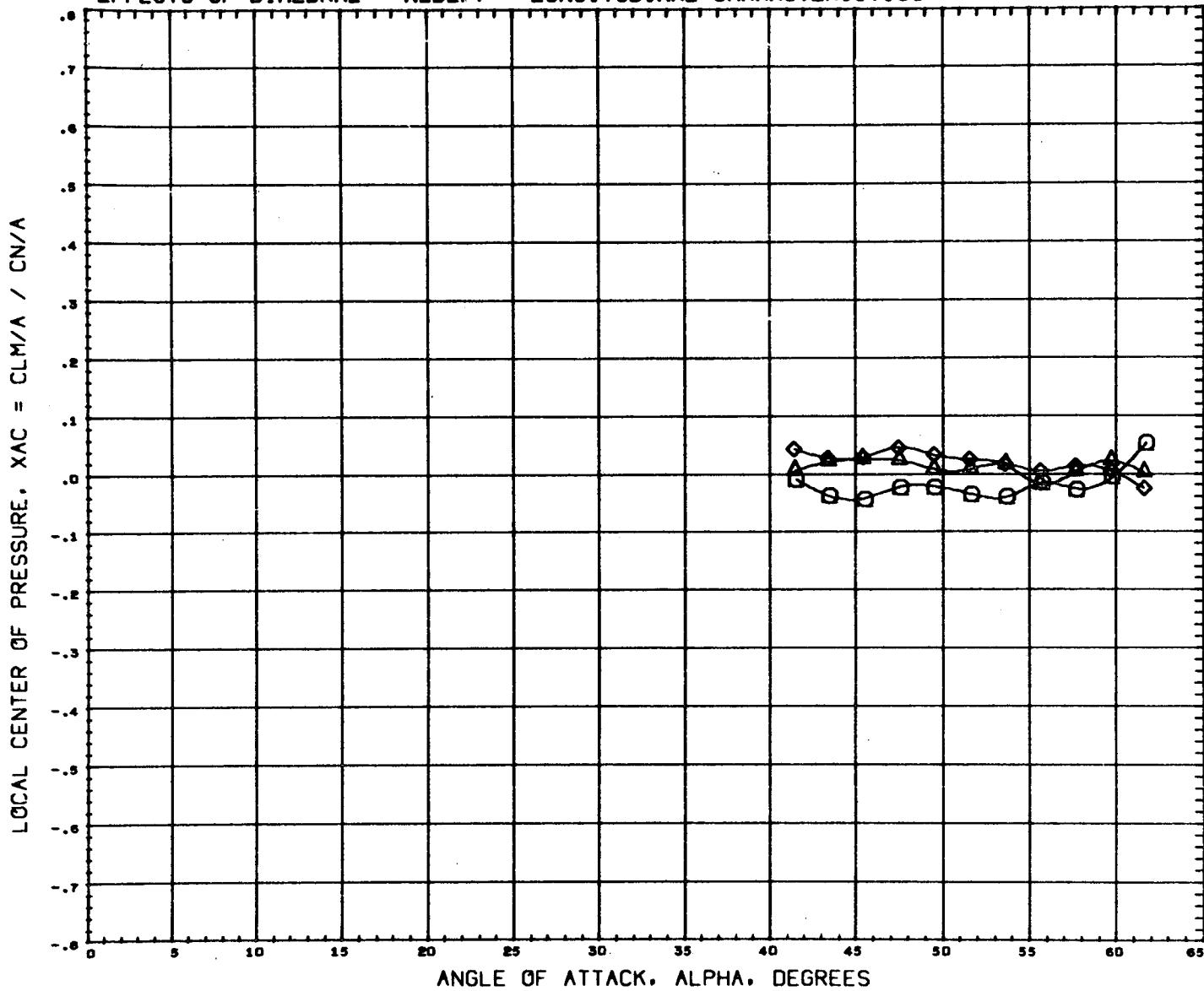
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REFERENCE INFORMATION

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 XMRP 3.5150 IN.
 YMRP 0.0000 IN.
 ZMRP 0.0000 IN.
 SCALE 0.0034

WACM 4.959

EFFECTS OF DIHEDRAL - N2B2F7 - LONGITUDINAL CHARACTERISTICS



DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (F54035) O MSFC 518 PRESS FED BOOSTER CONFIG X N2B2F7
 (Z54033) ▲ MSFC 518 PRESS FED BOOSTER CONFIG X N2B2F7
 (F54031) ◊ MSFC 518 PRESS FED BOOSTER CONFIG X N2B2F7

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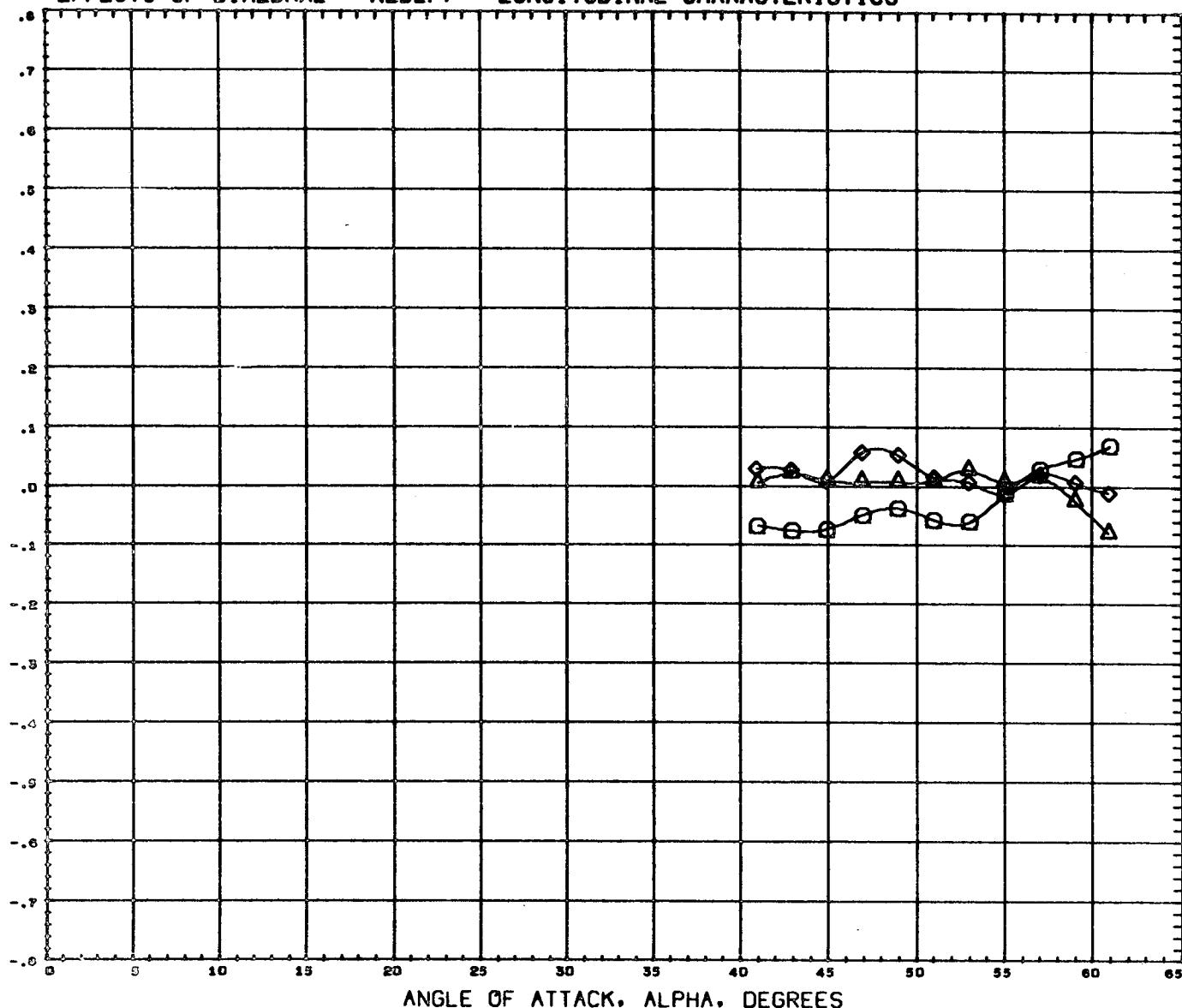
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 BREF 5.8590 IN.
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 YMRF 0.0000 IN.
 ZMRP 0.0000 IN.
 SCALE 0.0034

MACH 2.740

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EFFECTS OF DIHEDRAL - N2B2F7 - LONGITUDINAL CHARACTERISTICS

LOCAL CENTER OF PRESSURE, XAC = CLM/A / CNA/A



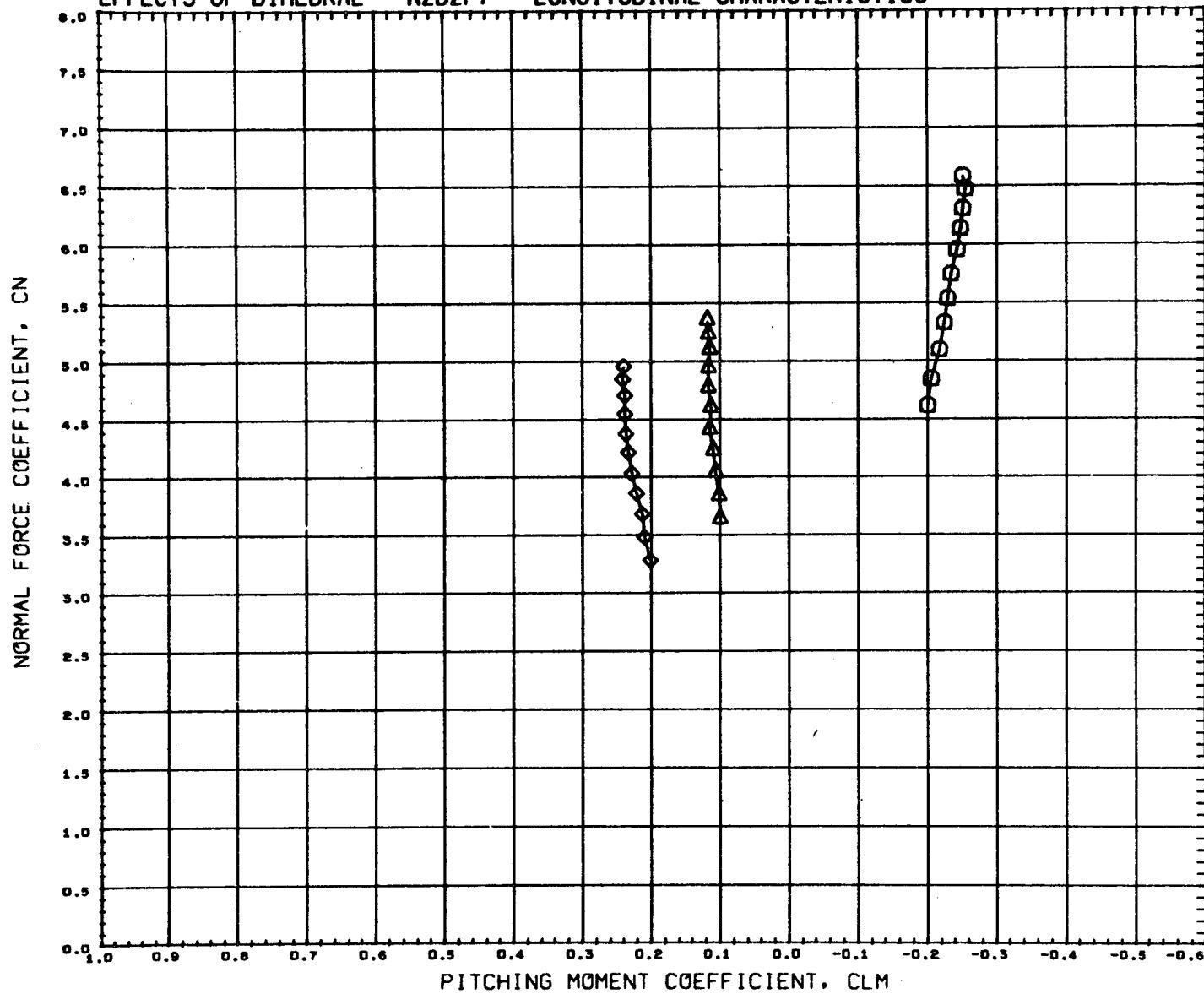
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BETA DIHDL
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REFERENCE INFORMATION
 SREF 2.1590 SQ. IN.
 LREF 5.8590 IN.
 BREF 5.8590 IN.
 XMRP 3.5150 IN.
 YMRF 0.0000 IN.
 ZMRP 0.0000 IN.
 SCALE 0.0034

MACH 4.959

EFFECTS OF DIHEDRAL - N2B2F7 - LONGITUDINAL CHARACTERISTICS



DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (HS4035) MSFC 518 PRESS FED BOOSTER CONFIG X N2B2F7
 (K54033) MSFC 518 PRESS FED BOOSTER CONFIG X N2B2F7
 (HS4031) MSFC 518 PRESS FED BOOSTER CONFIG X N2B2F7

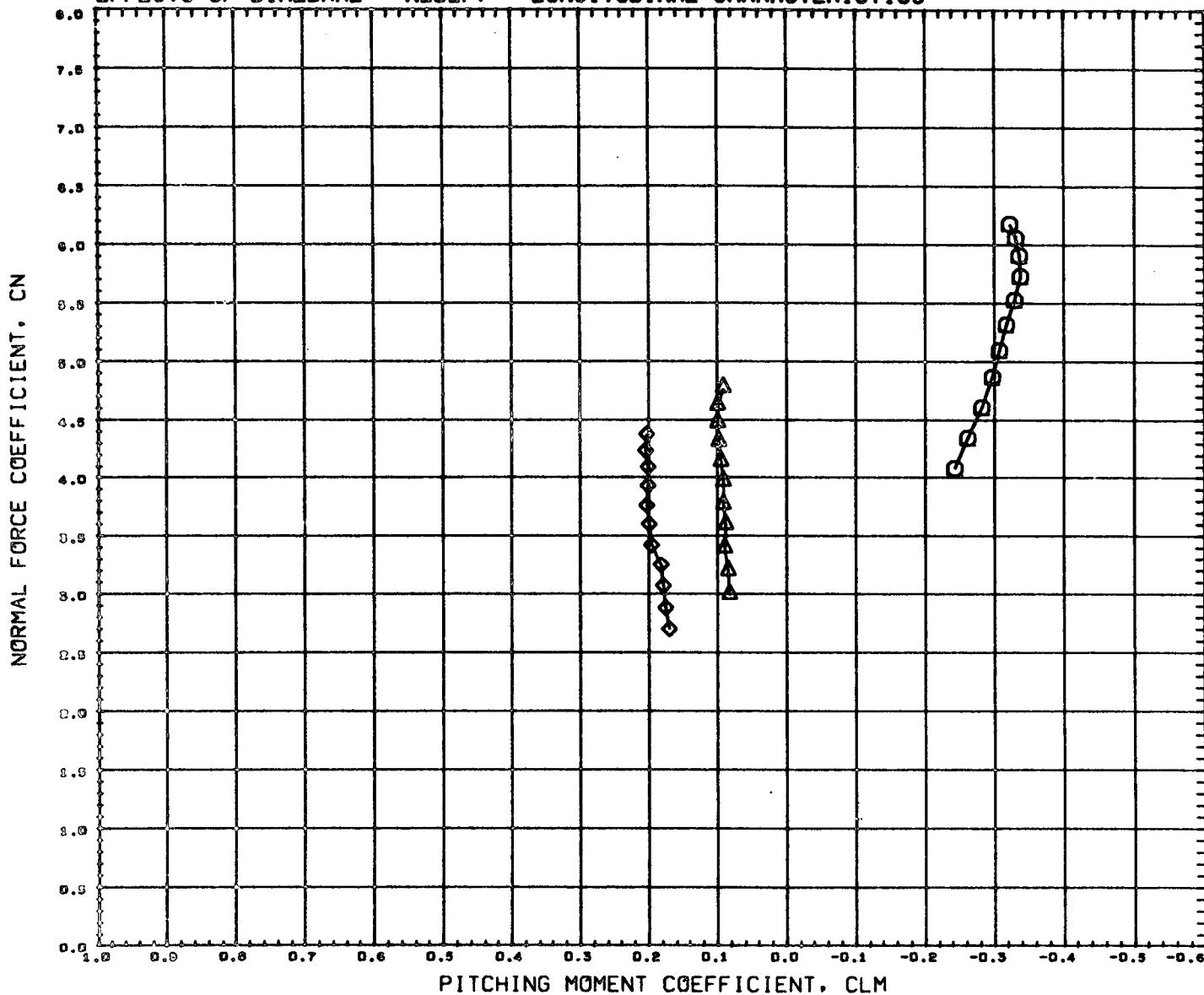
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REFERENCE INFORMATION
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 BREF 5.8590 IN.
 XMNP 3.5150 IN.
 YMNP 0.0000 IN.
 ZMNP 0.0000 IN.
 SCALE 0.0034

MACH 2.740

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EFFECTS OF DIHEDRAL - N2B2F7 - LONGITUDINAL CHARACTERISTICS



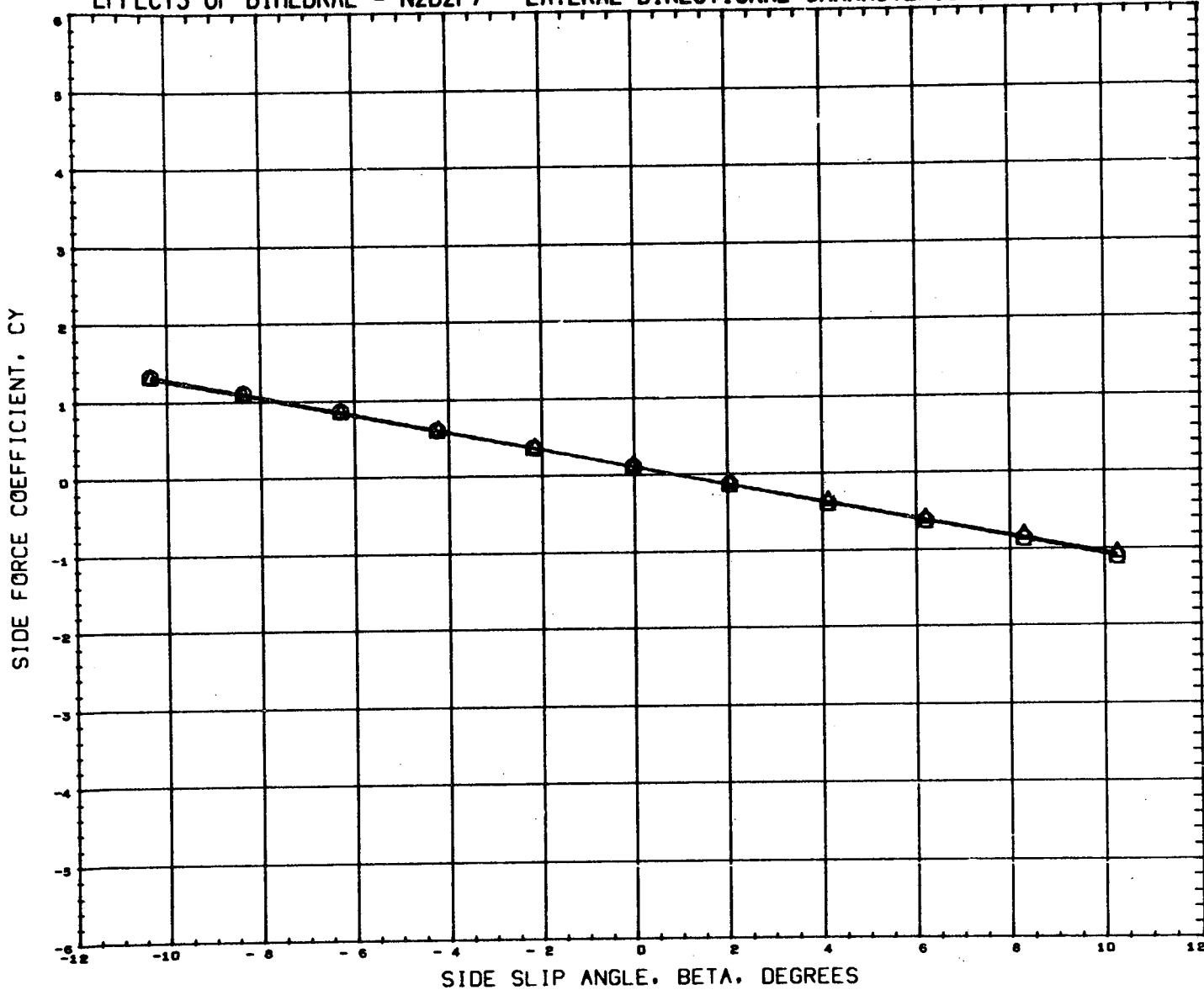
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BETA DIHDRL
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 0.000 45.000

REFERENCE INFORMATION
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 BREF 5.8590 IN.
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 YHRP 0.0000 IN.
 ZHRP 0.0000 IN.
 SCALE 0.0034

MACH 4.959

EFFECTS OF DIHEDRAL - N2B2F7 - LATERAL-DIRECTIONAL CHARACTERISTICS



DATA SET SYMBOL CONFIGURATION DESCRIPTION
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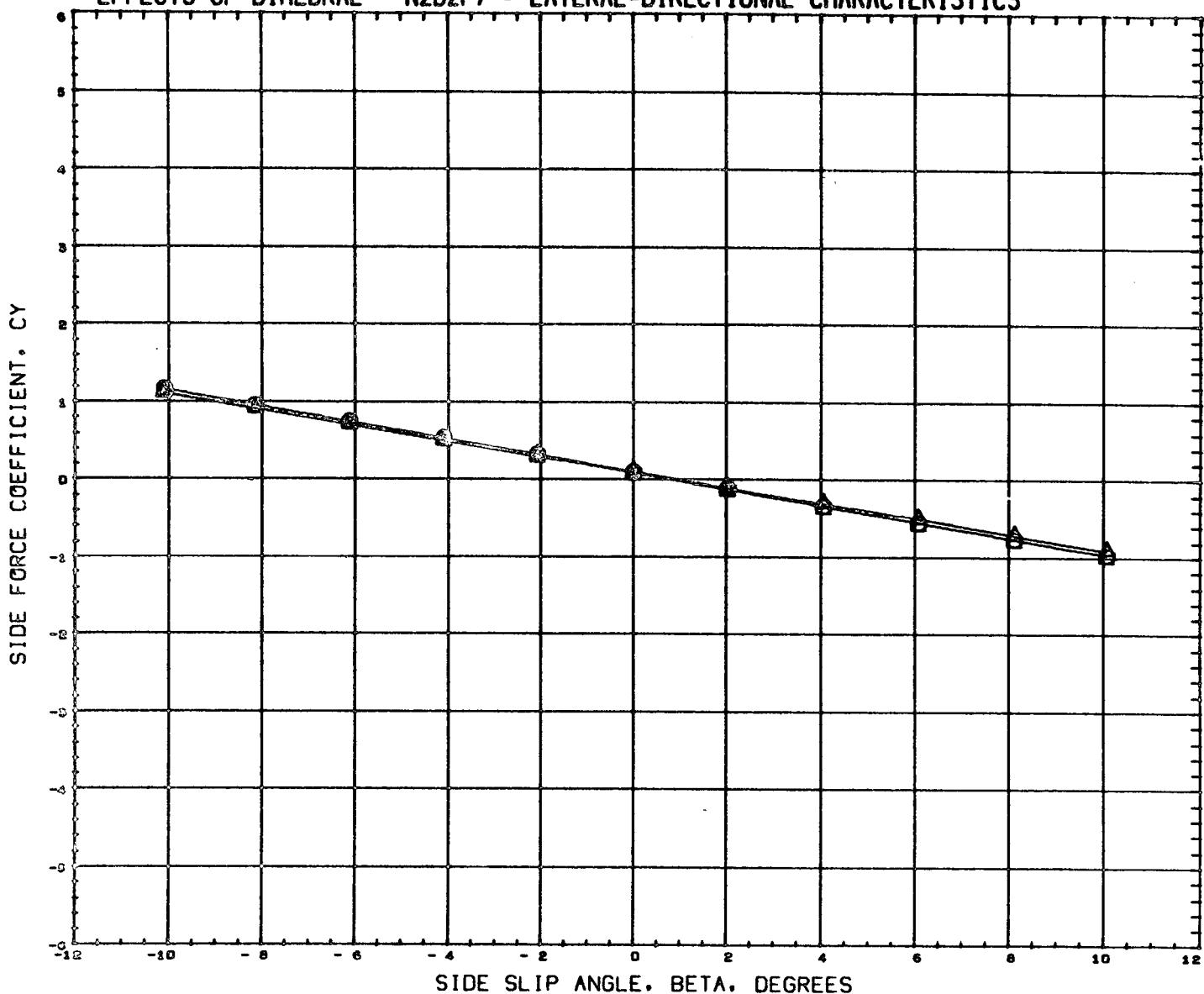
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REFERENCE INFORMATION
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 BREF 5.8590 IN.
 XMRP 3.5150 IN.
 YMRP 0.0000 IN.
 ZMRP 0.0000 IN.
 SCALE 0.0034

MACH 2.740

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EFFECTS OF DIHEDRAL - N2B2F7 - LATERAL-DIRECTIONAL CHARACTERISTICS



DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (K54034) MSFC 518 PRESS FED BOOSTER CONFIG X N2B2F7
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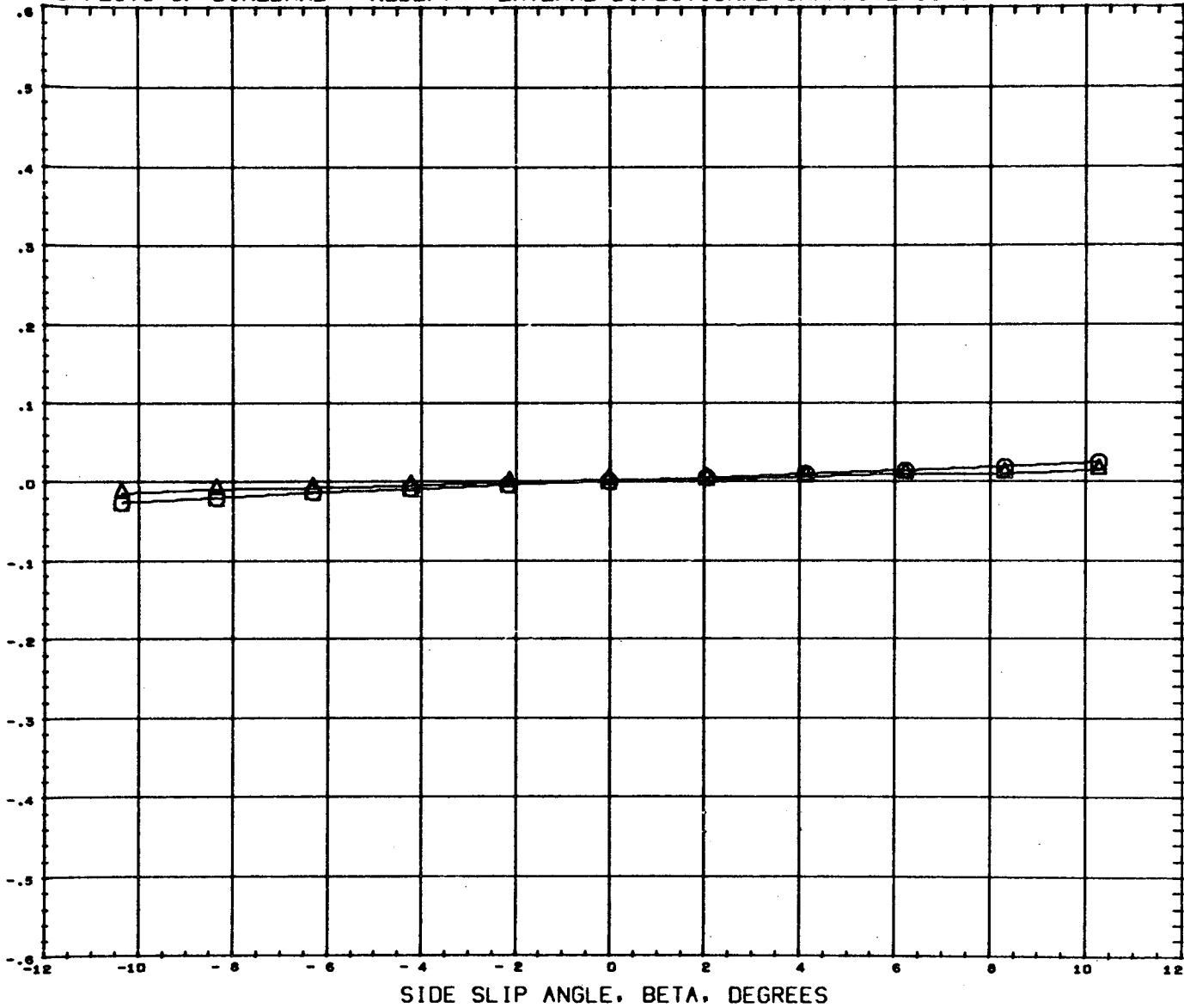
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 50.000 45.000

REFERENCE INFORMATION
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 LREF 5.8590 IN.
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 XMRP 3.5150 IN.
 YMRP 0.0000 IN.
 ZMRP 0.0000 IN.
 SCALE 0.0034

MACH 4.959

EFFECTS OF DIHEDRAL - N2B2F7 - LATERAL-DIRECTIONAL CHARACTERISTICS

YAWING MOMENT COEFFICIENT, CYN (BODY AXIS)



SIDE SLIP ANGLE, BETA, DEGREES

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (K54034) Q MSFC 518 PRESS FED BOOSTER CONFIG X N2B2F7
 (S54032) A MSFC 518 PRESS FED BOOSTER CONFIG X N2B2F7

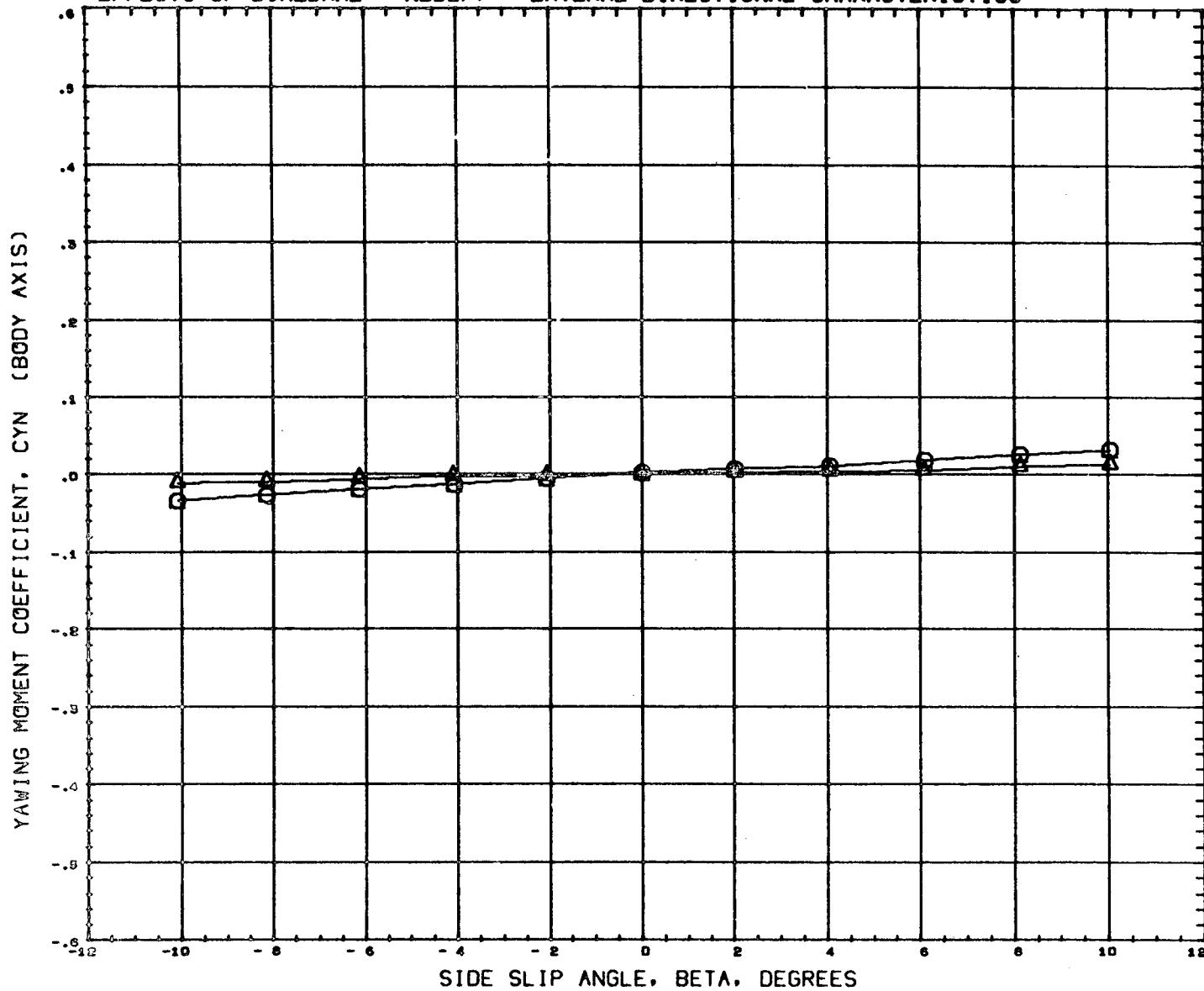
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REFERENCE INFORMATION
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 BREF 5.8590 IN.
 XMRP 3.5150 IN.
 YMRP 0.0000 IN.
 ZMRP 0.0000 IN.
 SCALE 0.0034

MACH 2.740

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EFFECTS OF DIHEDRAL - N2B2F7 - LATERAL-DIRECTIONAL CHARACTERISTICS



DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (K94094) MSFC 518 PRESS FED BOOSTER CONFIG X N2B2F7
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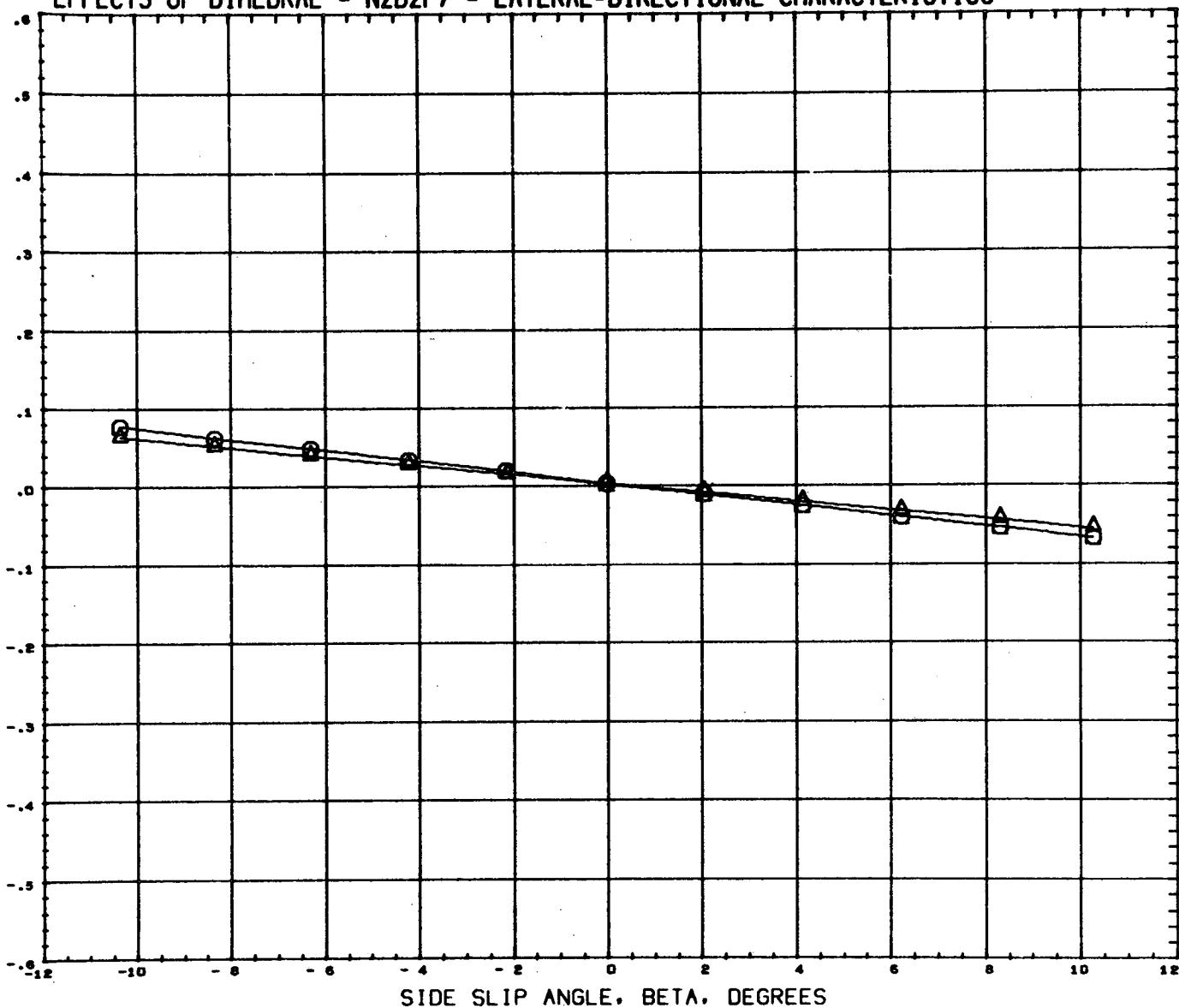
ALPHA DIHDL
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 50.000 45.000

REFERENCE INFORMATION	
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LREF	5.8590 IN.
BREF	5.8590 IN.
XMRP	3.5150 IN.
YMRP	0.0000 IN.
ZMRP	0.0000 IN.
SCALE	0.0034

MACH 4.999

EFFECTS OF DIHEDRAL - N2B2F7 - LATERAL-DIRECTIONAL CHARACTERISTICS

ROLLING MOMENT COEFFICIENT, CBL (BODY AXIS)



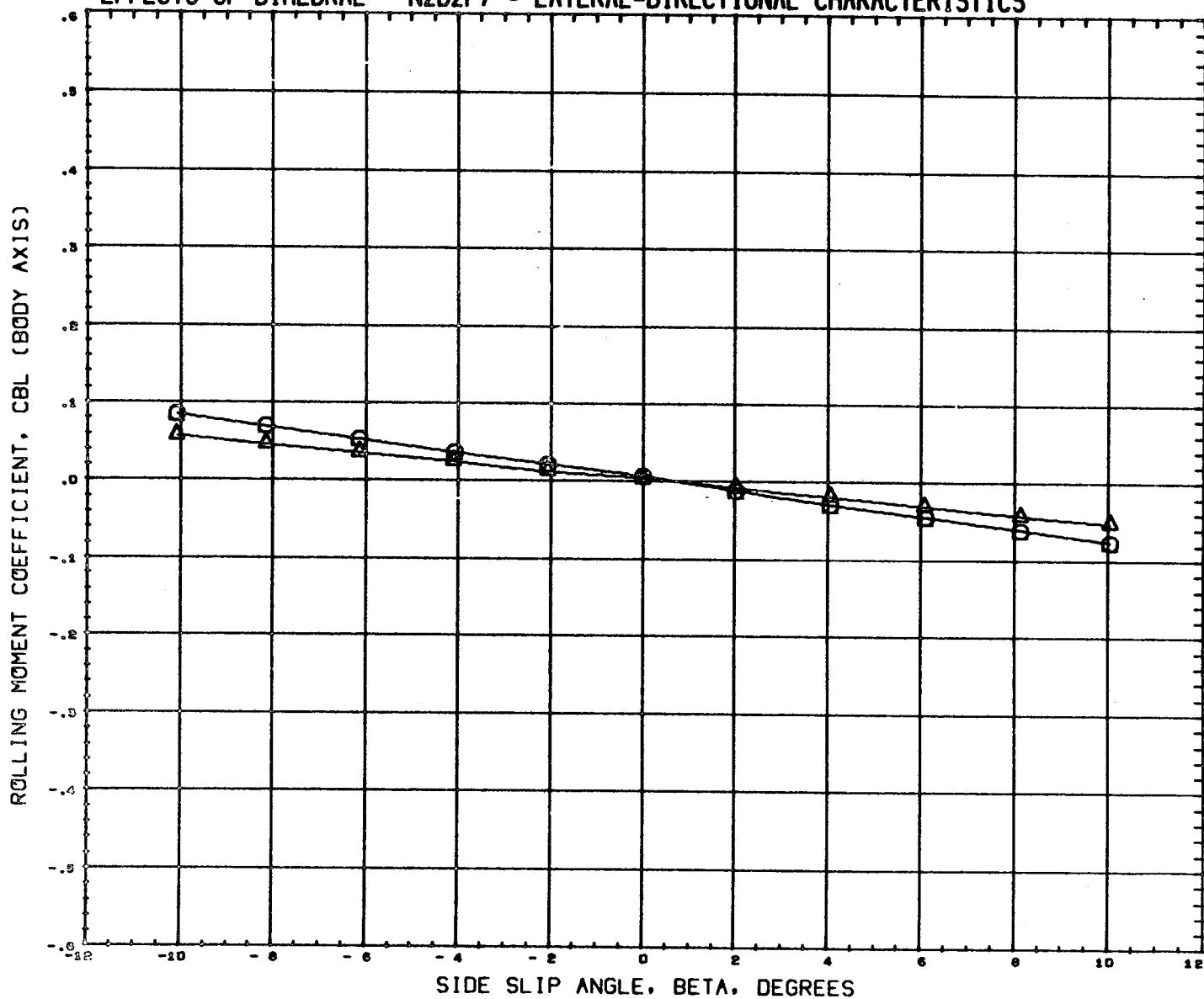
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 (K54032) MSFC 518 PRESS FED BOOSTER CONFIG X N2B2F7

ALPHA DIHDRL
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 50.000 45.000

REFERENCE INFORMATION
 SREF 2.1590 SQ.IN.
 LREF 5.8590 IN.
 BREF 5.8590 IN.
 XMRP 3.5150 IN.
 YMRP 0.0000 IN.
 ZMRP 0.0000 IN.
 SCALE 0.0034

MACH 2.740

EFFECTS OF DIHEDRAL - N2B2F7 - LATERAL-DIRECTIONAL CHARACTERISTICS



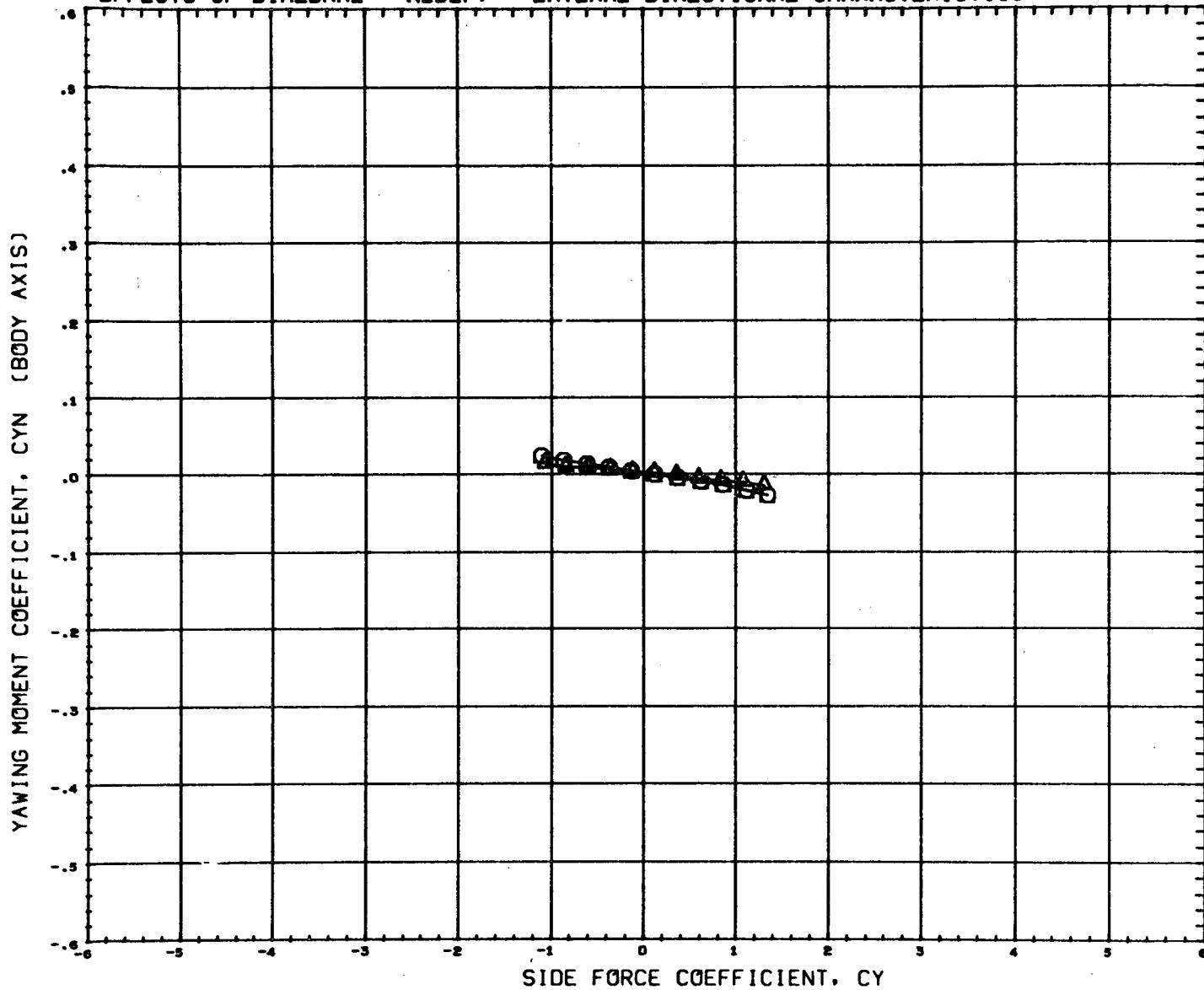
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 (K54094) MSFC 518 PRESS FED BOOSTER CONFIG X N2B2F7
 (SS4092) MSFC 510 PRESS FED BOOSTER CONFIG X N2B2F7

ALPHA DIHDL
 50,000 30,000
 50,000 45,000

REFERENCE INFORMATION
 SREF 2.1590 80. IN.
 LREF 5.8590 IN.
 BREF 5.8590 IN.
 XMNP 3.5150 IN.
 YMNP 0.0000 IN.
 ZMNP 0.0000 IN.
 SCALE 0.0034

MACH 4.959

EFFECTS OF DIHEDRAL - N2B2F7 - LATERAL-DIRECTIONAL CHARACTERISTICS



DATA SET SYMBOL CONFIGURATION DESCRIPTION
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 (554032) MSFC 518 PRESS FED BOOSTER CONFIG X N2B2F7

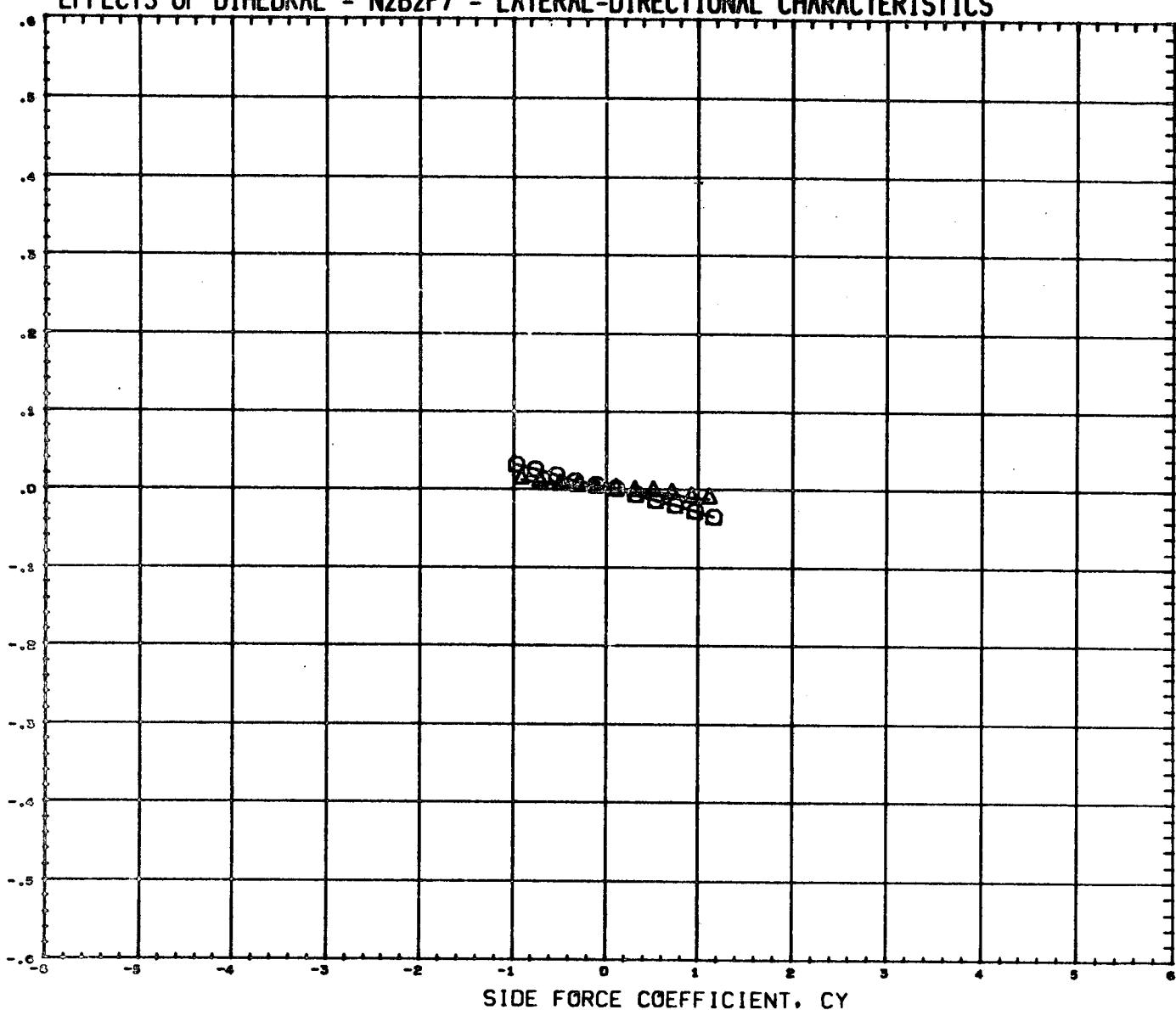
ALPHA DIHEDRL
 50.000 30.000
 50.000 45.000

REFERENCE INFORMATION
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 LREF 5.6590 IN.
 BREF 5.6590 IN.
 XMMP 3.5150 IN.
 YMMP 0.0000 IN.
 ZMMP 0.0000 IN.
 SCALE 0.0034

MACH 2.740

EFFECTS OF DIHEDRAL - N2B2F7 - LATERAL-DIRECTIONAL CHARACTERISTICS

YAWING MOMENT COEFFICIENT, CYN (BODY AXIS)



SIDE FORCE COEFFICIENT, CY

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (K94034) Q NSPC 518 PRESS FED BOOSTER CONFIG X N2B2F7
 (000032) A NSPC 518 PRESS FED BOOSTER CONFIG X N2B2F7

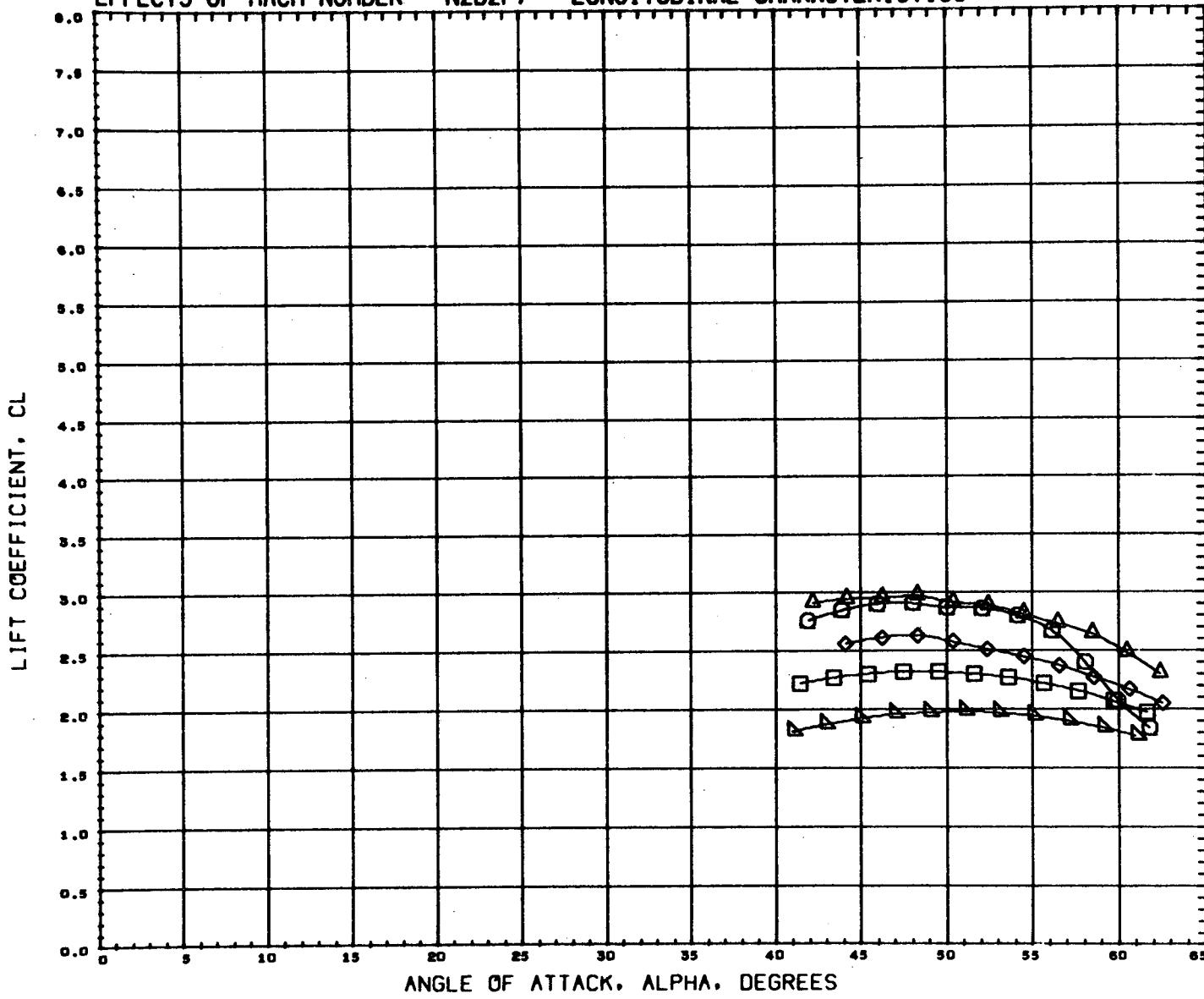
ALPHA DIHDL
 50.000 30.000
 50.000 45.000

REFERENCE INFORMATION
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 LREF 5.859D IN.
 BREF 5.859D IN.
 XMRP 3.515D IN.
 YMRP 0.0000 IN.
 ZMRP 0.0000 IN.
 SCALE 0.0034

MACH 4.059

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EFFECTS OF MACH NUMBER - N2B2F7 - LONGITUDINAL CHARACTERISTICS

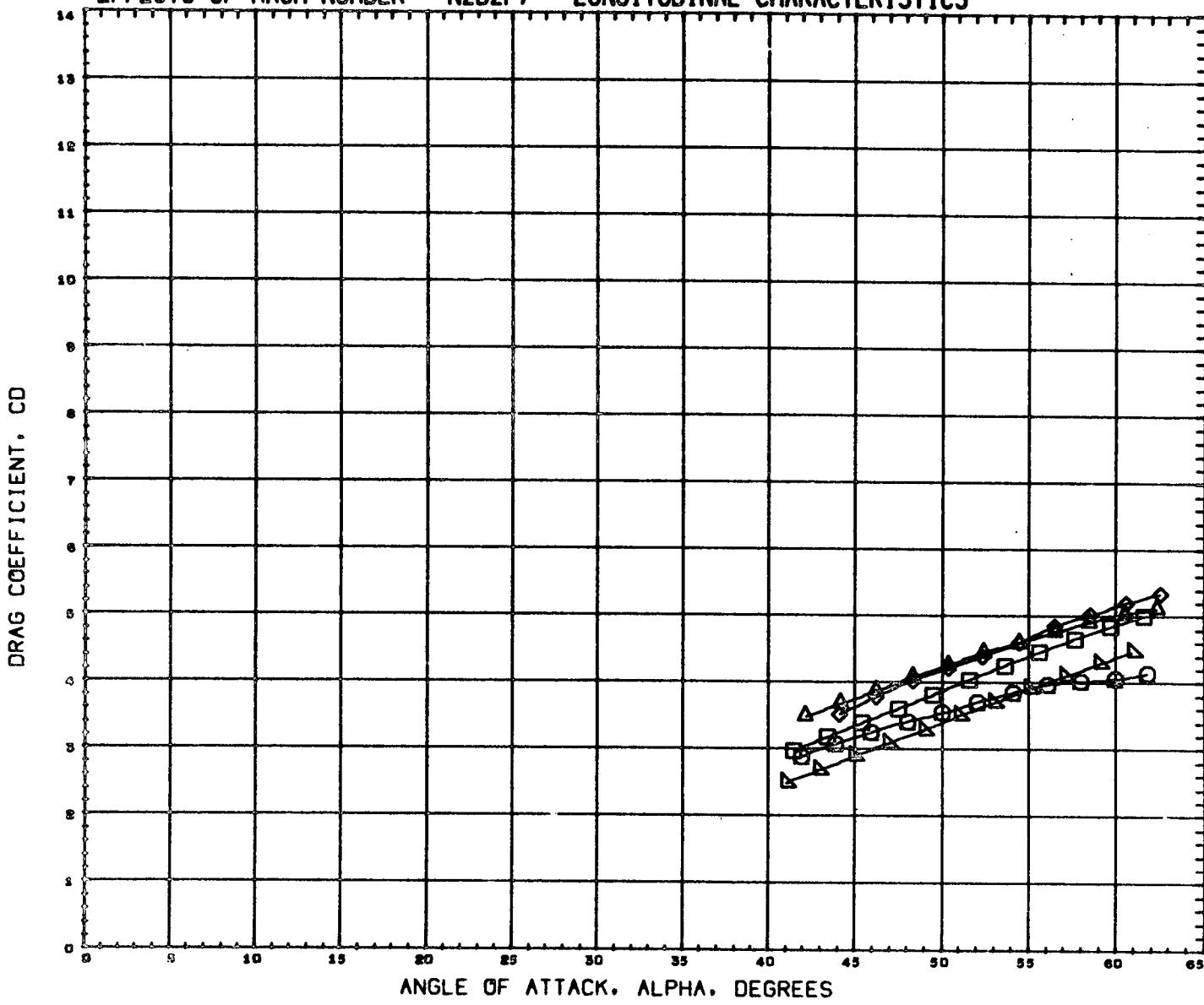


SYMBOL	PARAMETRIC VALUES		
	MACH	BETA	DIHDRAL
○	0.900	0.000	30.000
◇	1.198		
□	1.964		
△	2.740		
	4.959		

DATA HIST. CODE M5TV*E*A

REFERENCE INFORMATION		
SREF	2.1590	IN. SQ. IN.
LREF	5.8590	IN.
BREF	5.8590	IN.
XMRP	3.5150	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

EFFECTS OF MACH NUMBER - N2B2F7 - LONGITUDINAL CHARACTERISTICS



SYMBOL	MACH	PARAMETRIC VALUES		
		BETA	0.000	DINDRL
○	0.900			
△	1.190			
◊	1.364			
□	2.740			

DATA MIST. CODE MISTV*E*#

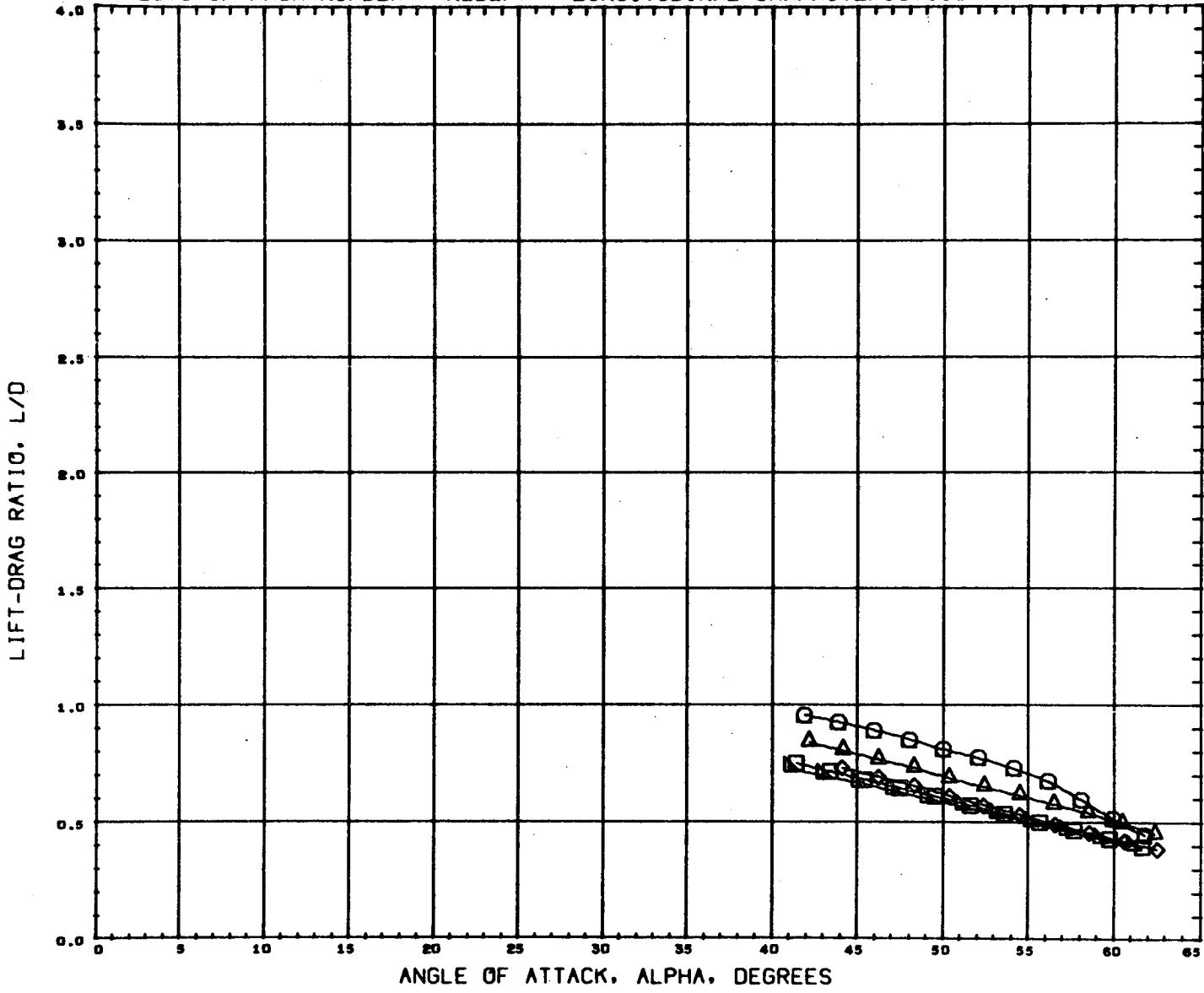
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MRP	0.0000	IN.
MRP	0.0000	IN.
CALE	0.0034	

MSFC 518 PRESS FED BOOSTER CONFIG X N2B2F7

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EFFECTS OF MACH NUMBER - N2B2F7 - LONGITUDINAL CHARACTERISTICS



SYMBOL	MACH	PARAMETRIC VALUES		
		BETA	0.000	DIMDRL
○	0.900			30.000
△	1.198			
◊	1.964			
□	2.740			
▽	4.959			
		DATA MIST. CODE	NSTV*E*A	

DATA MIST. CODE MSTV*E*A

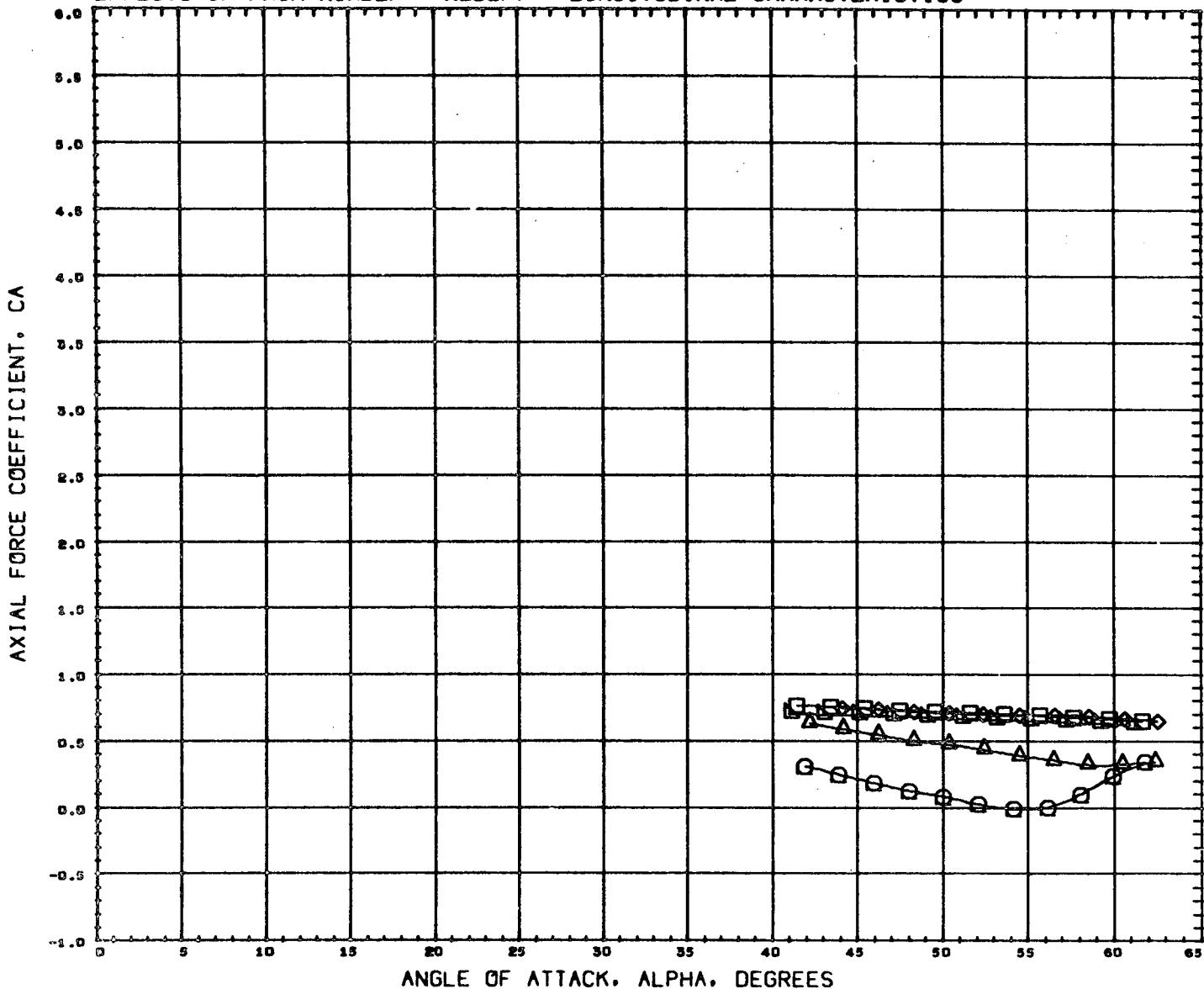
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REF	5.8590	IN.
REF	5.8590	IN.
MRP	3.5150	IN.
MRP	0.0000	IN.
MRP	0.0000	IN.
CALE	0.0034	

MSFC 518 PRESS FED BOOSTER CONFIG X N2B2F7

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EFFECTS OF MACH NUMBER - N2B2F7 - LONGITUDINAL CHARACTERISTICS



SYMBOL	MACH	PARAMETRIC VALUES		
		BETA	0.000	DIHDRLL
○	0.000			30,000
△	1.198			
◊	2.044			
□	2.740			
▽	4.090			

DATA HIST. CODE MSTV*E*A

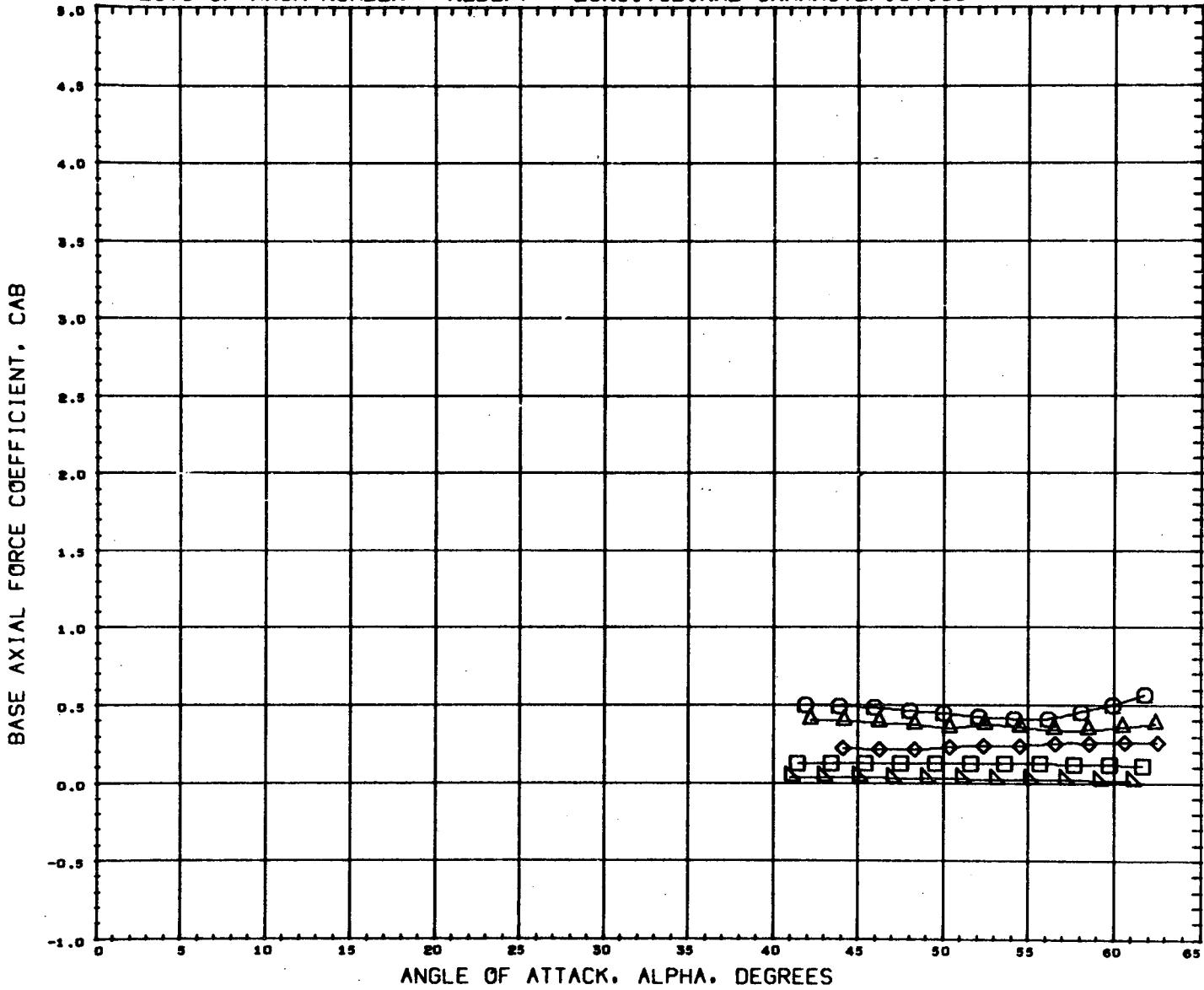
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REF	5.8590	IN.
H.R.P	3.5150	IN.
H.R.P	0.0000	IN.
H.R.P	0.0000	IN.
CALE	0.0034	

MSFC 518 PRESS FED BOOSTER CONFIG X N2B2F7

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EFFECTS OF MACH NUMBER - N2B2F7 - LONGITUDINAL CHARACTERISTICS



SYMBOL	MACH	PARAMETRIC VALUES		
		BETA	0.000	DIMDRL
○	0.900			30.000
△	1.198			
◊	1.964			
□	2.740			
■	4.959			
DATA MIST. CODE MSTV*EEA				

DATA MIST. CODE MSTV*E*A

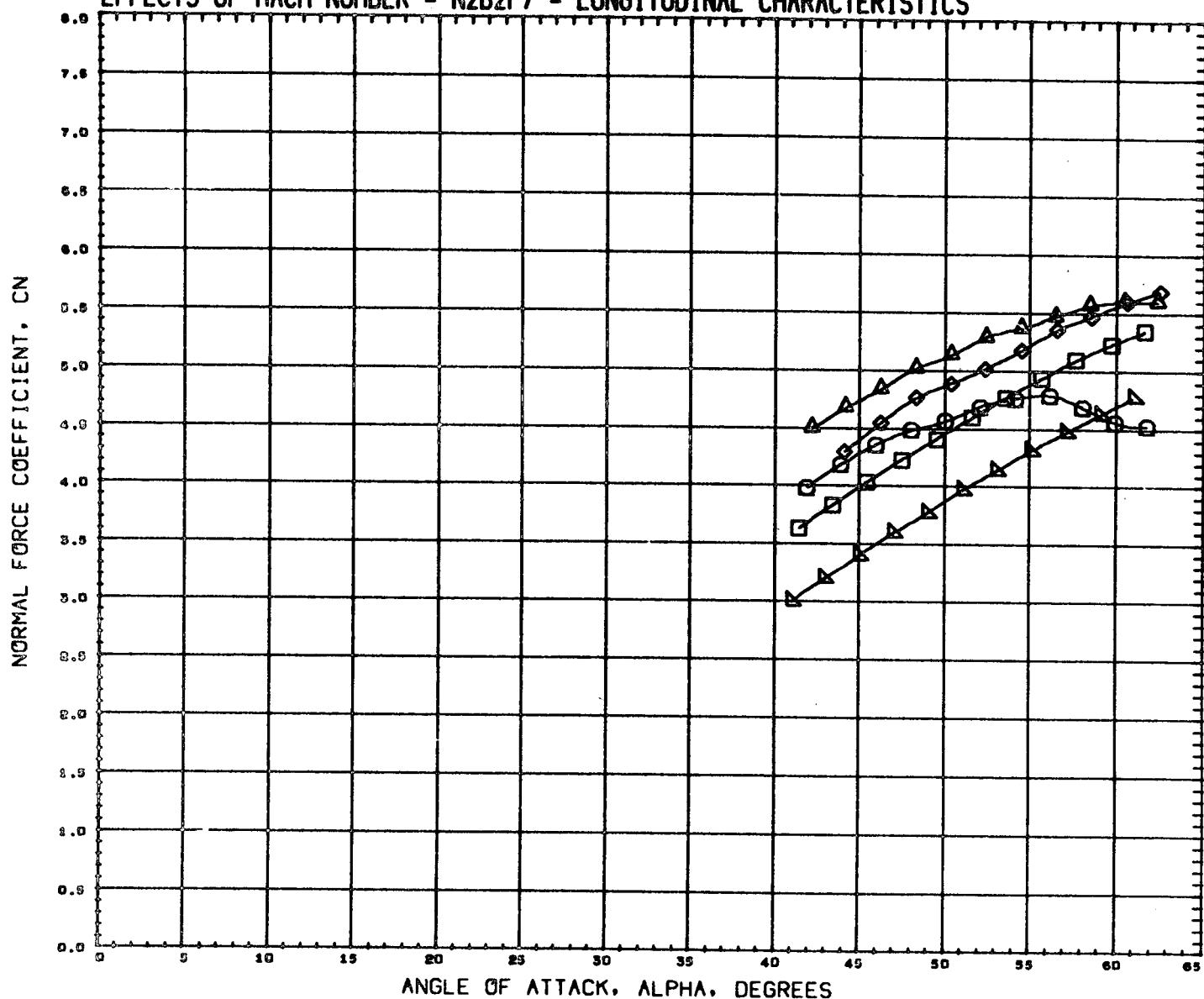
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LREF	5.8590	IN.
BREF	5.8590	IN.
XMRP	3.5150	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

MSFC 518 PRESS FED BOOSTER CONFIG X N2B2F7

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EFFECTS OF MACH NUMBER - N2B2F7 - LONGITUDINAL CHARACTERISTICS



SYMBOL	MACH	PARAMETRIC VALUES		
		BETA	DINDRL	30.000
○	0.900			
△	1.190			
◊	1.894			
□	2.740			
■	4.950			

DATA MIST. CODE MSTV4E8A

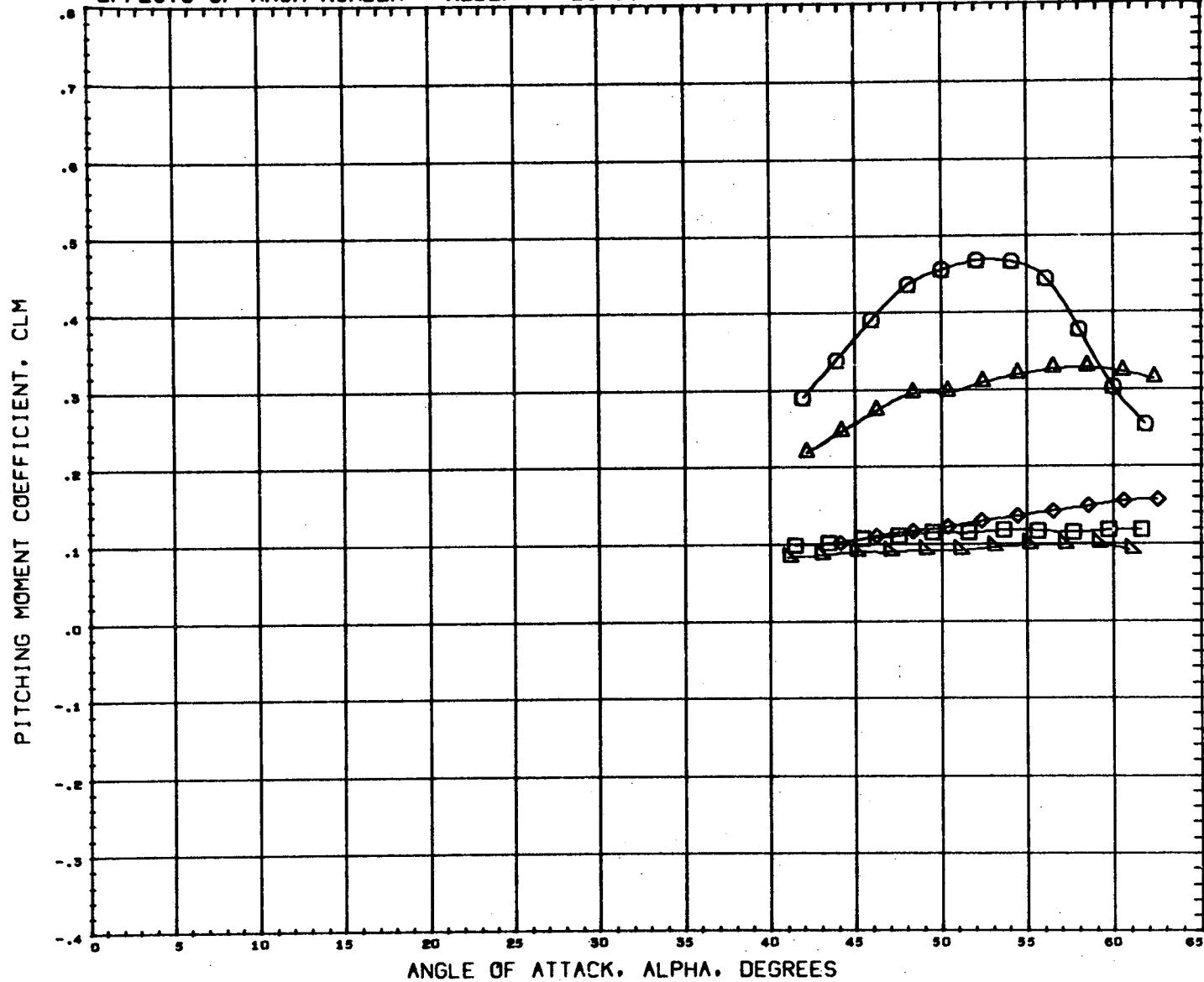
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REF	5.8590	IN.
REF	5.8590	IN.
MRP	3.5150	IN.
MRP	0.0000	IN.
MRP	0.0000	IN.
SCALE	0.0034	

MSFC 518 PRESS FED BOOSTER CONFIG X N2B2F7

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EFFECTS OF MACH NUMBER - N2B2F7 - LONGITUDINAL CHARACTERISTICS



SYMBOL	MACH	PARAMETRIC VALUES		
		BETA	O.000	DIMDRL
O	0.900			30.000
△	1.198			
◊	1.964			
□	2.748			
■	4.959			

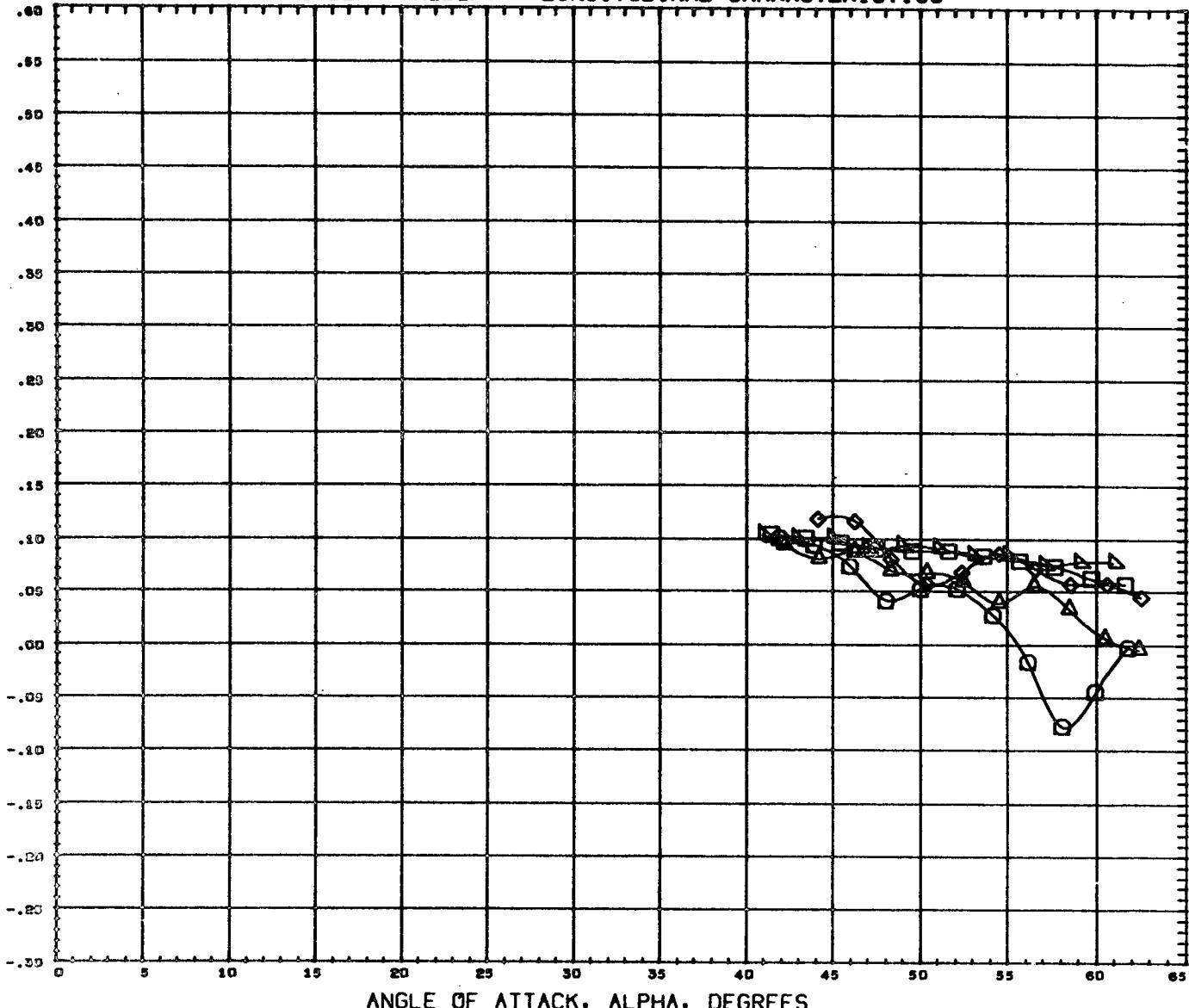
DATA HIST. CODE NSTV*EEA

DATA HIST. CODE MSTR*E*A

REFERENCE INFORMATION		
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REF	5.8590	IN.
REF	5.8590	IN.
MRP	3.5150	IN.
MRP	0.0000	IN.
MRP	0.0000	IN.
CALE	0.0034	

EFFECTS OF MACH NUMBER - N2B2F7 - LONGITUDINAL CHARACTERISTICS

LOCAL NORMAL FORCE COEFFICIENT SLOPE, CN/A, PER DEGREE



SYMBOL MACH
□ 0.900
△ 1.198
▽ 1.334
○ 2.740
× 4.959

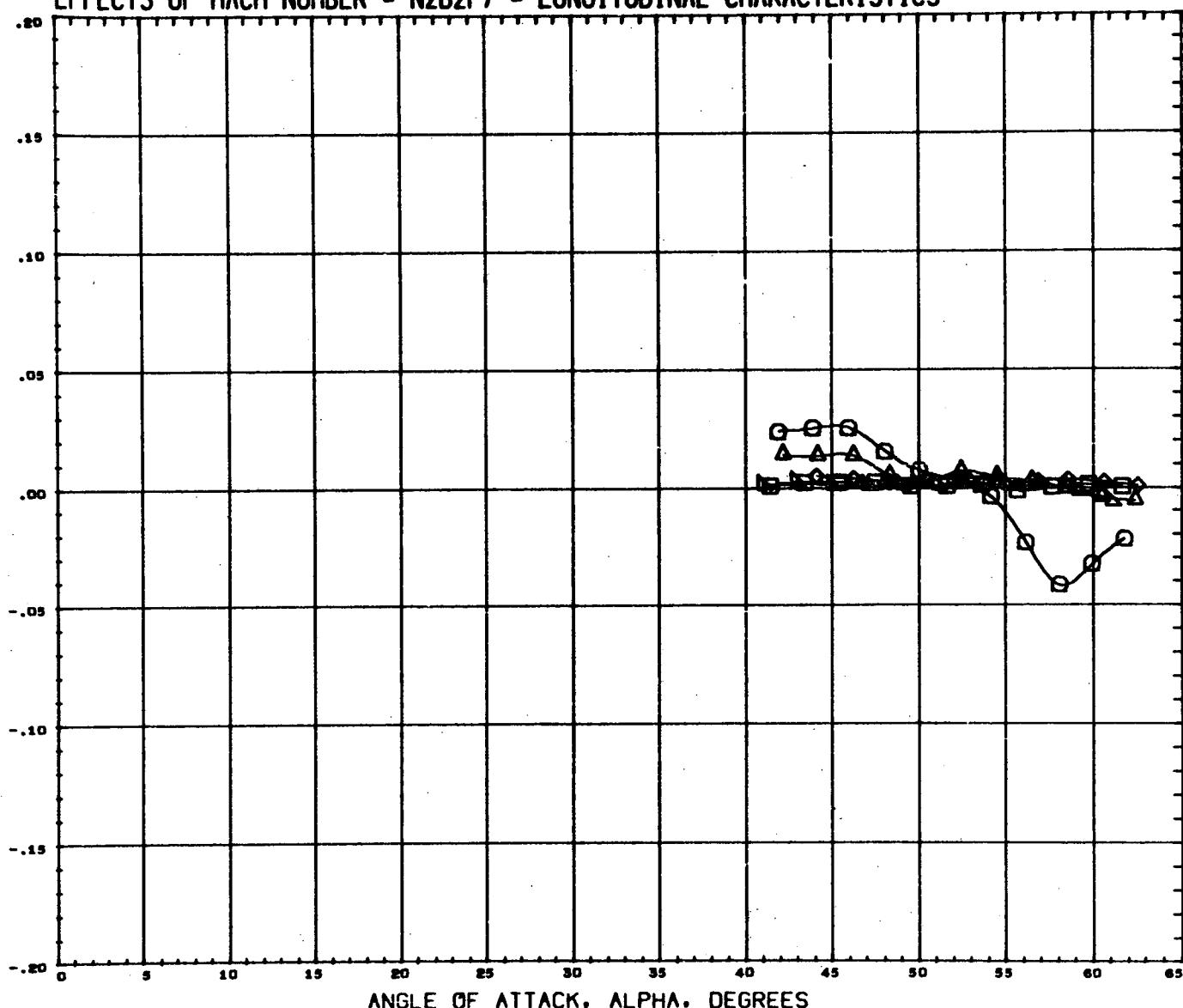
PARAMETRIC VALUES
0.000 DIMHRL 30.000

DATA MIST. CODE MSTV*E*A

REFERENCE INFORMATION		
SREF	2.1590	IN.
LREF	5.8590	IN.
BREF	5.8590	IN.
XMRP	3.5150	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

EFFECTS OF MACH NUMBER - N2B2F7 - LONGITUDINAL CHARACTERISTICS

LOCAL PITCHING MOMENT COEFFICIENT SLOPE, CLM/A. PER DEGREE



SYMBOL
○ □ △ ◇ ◆

MACH
0.900 BETA 0.000 DIMDRL 30.000
PARAMETRIC VALUES

DATA MIST. CODE M5TV*E*A

REFERENCE INFORMATION
SREF 2.1590 SQ.IN.
LREF 5.8590 IN.
BREF 5.8590 IN.
XMRP 3.5150 IN.
YMRP 0.0000 IN.
ZMRP 0.0000 IN.
SCALE 0.0034

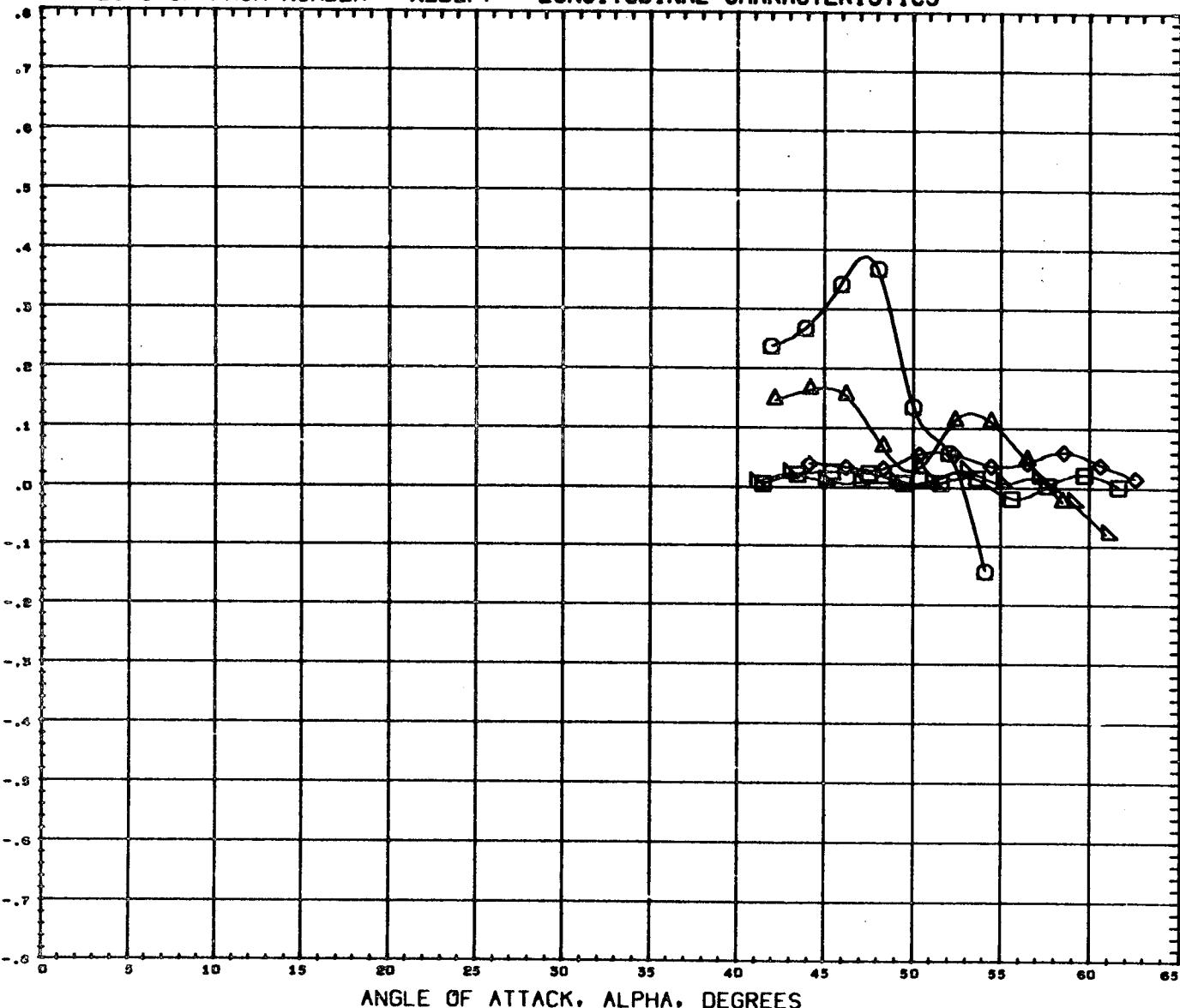
MSFC 518 PRESS FED BOOSTER CONFIG X N2B2F7

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EFFECTS OF MACH NUMBER - N2B2F7 - LONGITUDINAL CHARACTERISTICS

LOCAL CENTER OF PRESSURE, XAC = CLM/A / CN/A

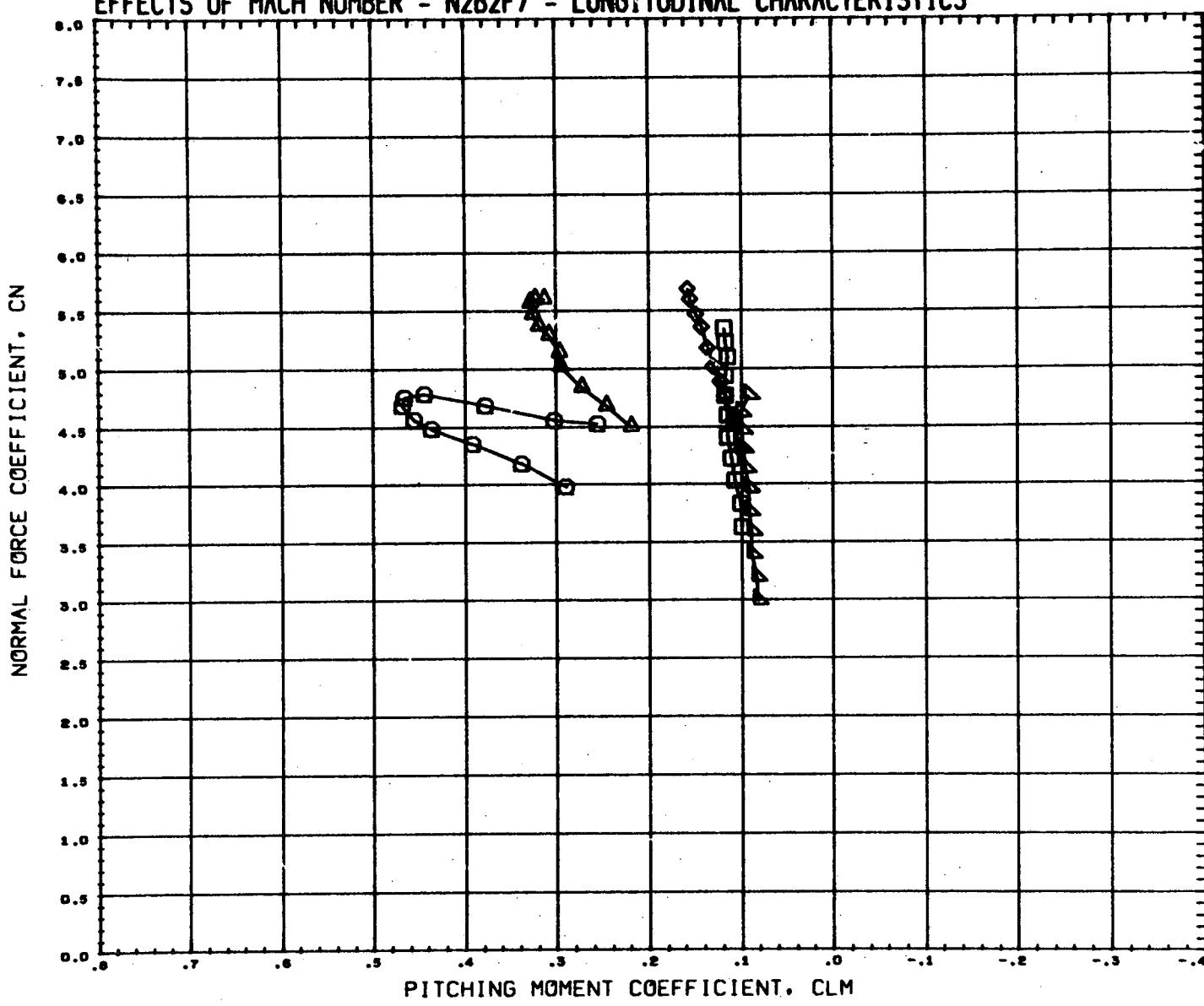


SYMBOL	PARAMETRIC VALUES	
	MACH	BETA
\square	0.900	0.000
\diamond	1.190	
\triangle	1.964	
\triangleright	2.740	
∇	4.059	

DATA MIST. CODE MSGC&A&G

REFERENCE INFORMATION		
SREF	2.1590	36. IN.
LREF	5.8590	IN.
BREF	5.8590	IN.
XMRP	3.5150	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

EFFECTS OF MACH NUMBER - N2B2F7 - LONGITUDINAL CHARACTERISTICS

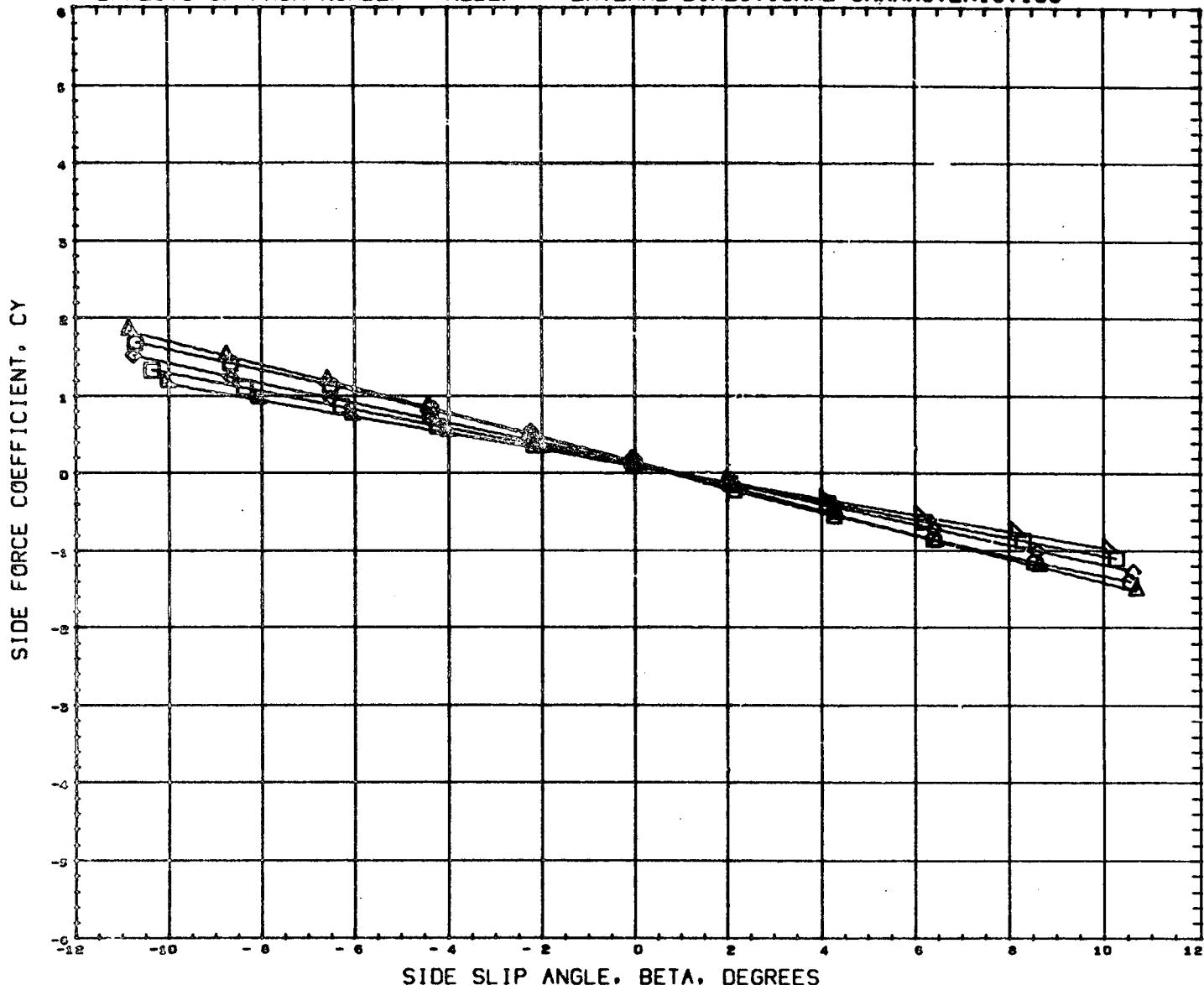


SYMBOL	MACH	PARAMETRIC VALUES		
		BETA	0.000	DIHDRLL
O	0.900			30.000
△	1.198			
◊	1.964			
□	2.740			
▽	4.959			

DATA HIST. CODE MSTV*E*A

REFERENCE INFORMATION		
REF	2.1590	89. IN.
REF	5.8590	IN.
REF	5.8590	IN.
IRP	3.5150	IN.
IRP	0.0000	IN.
IRP	0.0000	IN.
CALE	0.0034	

EFFECTS OF MACH NUMBER - N2B2F7 - LATERAL-DIRECTIONAL CHARACTERISTICS

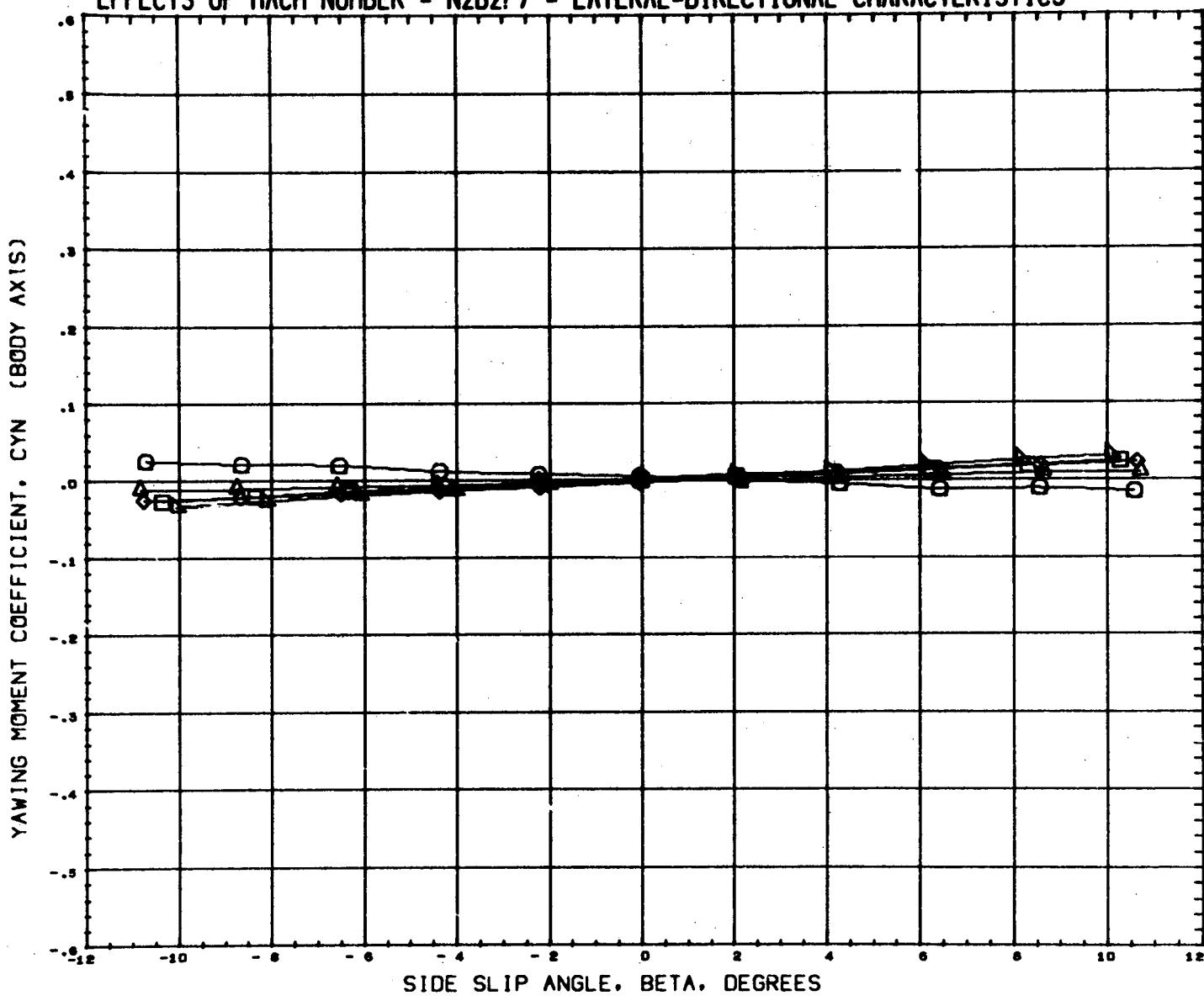


SYMBOL MACH PARAMETRIC VALUES
 Circle 0.001 ALPHA 50.000 DIHDRL 30.000
 Square 1.200
 Diamond 1.964
 Triangle 2.740
 Cross 4.059

DATA MIST. CODE MS

REFERENCE INFORMATION
 SREF 2.1590 SQ. IN.
 LREF 5.8590 IN.
 BREF 5.8590 IN.
 XMRP 3.5150 IN.
 YMRF 0.0000 IN.
 ZMRP 0.0000 IN.
 SCALE 0.0034

EFFECTS OF MACH NUMBER - N2B2F7 - LATERAL-DIRECTIONAL CHARACTERISTICS

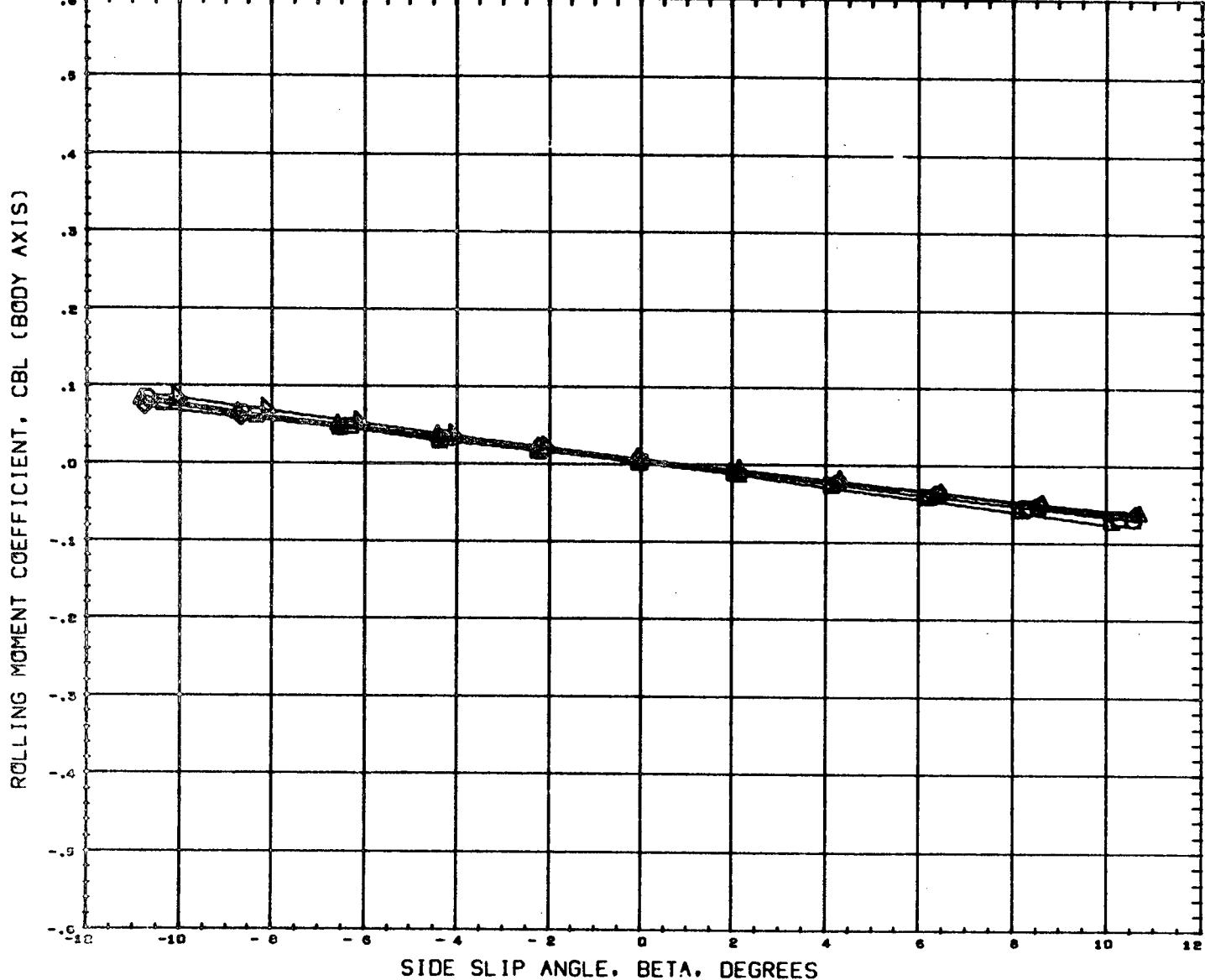


SYMBOL	MACH	PARAMETRIC VALUES
○	0.901	ALPHA
△	1.200	50.000 DIHORL
◊	1.964	30.000
□	2.740	
▽	4.959	

DATA HIST. CODE MS

REFERENCE INFORMATION		
REF	2.1590	SQ.IN.
REF	5.8590	IN.
REF	5.8590	IN.
MRP	3.5150	IN.
MRP	0.0000	IN.
MRP	0.0000	IN.
CALE	0.0034	

EFFECTS OF MACH NUMBER - N2B2F7 - LATERAL-DIRECTIONAL CHARACTERISTICS



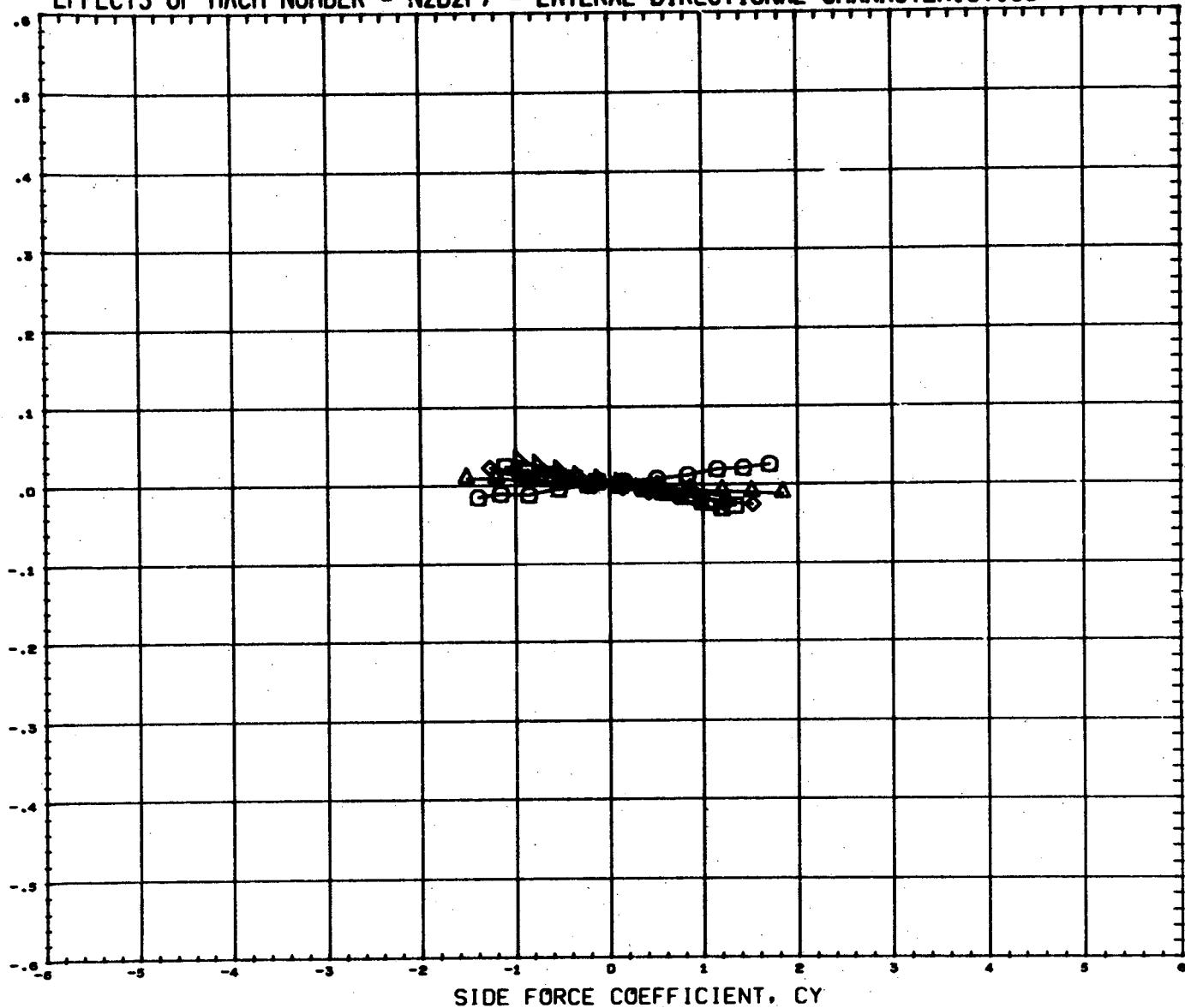
SYMBOL	MACH	PARAMETRIC VALUES		
○	0.001	ALPHA	50.000	DIHDLR
△	1.000			30.000
◊	1.004			
□	2.700			
▽	4.989			

DATA MIST. CODE K3

REFERENCE INFORMATION		
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BREF	5.8590	IN.
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ZMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

EFFECTS OF MACH NUMBER - N2B2F7 - LATERAL-DIRECTIONAL CHARACTERISTICS

YAWING MOMENT COEFFICIENT, CYN (BODY AXIS)



SYMBOL	MACH	PARAMETRIC VALUES		
		ALPHA	50.000	DIHORL 30.000
○	0.901			
△	1.200			
◊	1.964			
□	2.740			
■	4.959			

DATA MIST. CODE MS

REFERENCE INFORMATION		
SREF	2.1590	IN. SQ. IN.
LREF	5.8590	IN.
BREF	5.8590	IN.
XMRP	3.5150	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

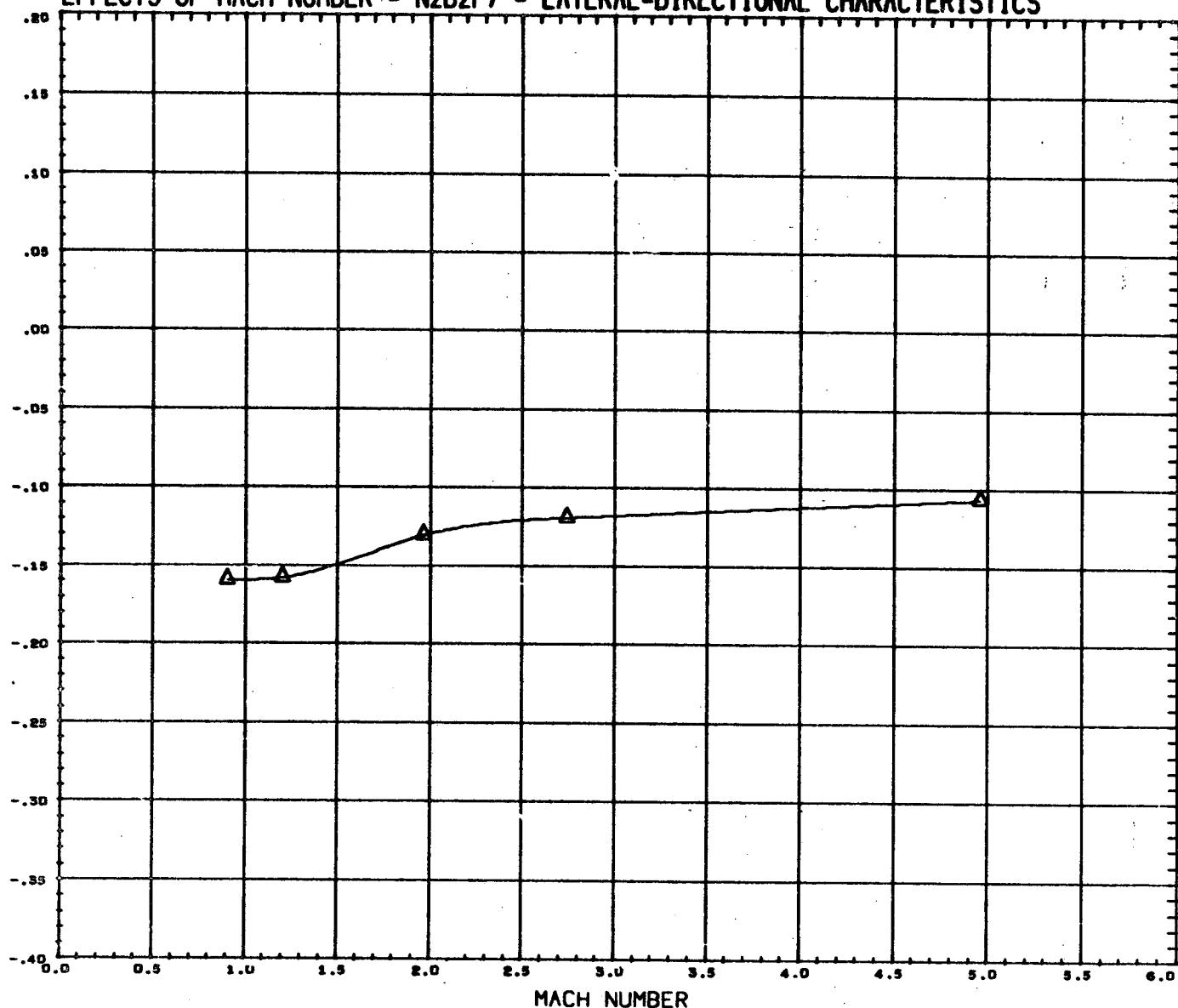
MSFC 518 PRESS FED BOOSTER CONFIG X N2B2F7

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EFFECTS OF MACH NUMBER - N2B2F7 - LATERAL-DIRECTIONAL CHARACTERISTICS

SIDE FORCE DERIVATIVE WITH BETA, $D(C_Y)/DB$, PER DEGREE



PARAMETRIC VALUES

ALPHA 50.000 DIHDRL 30.000

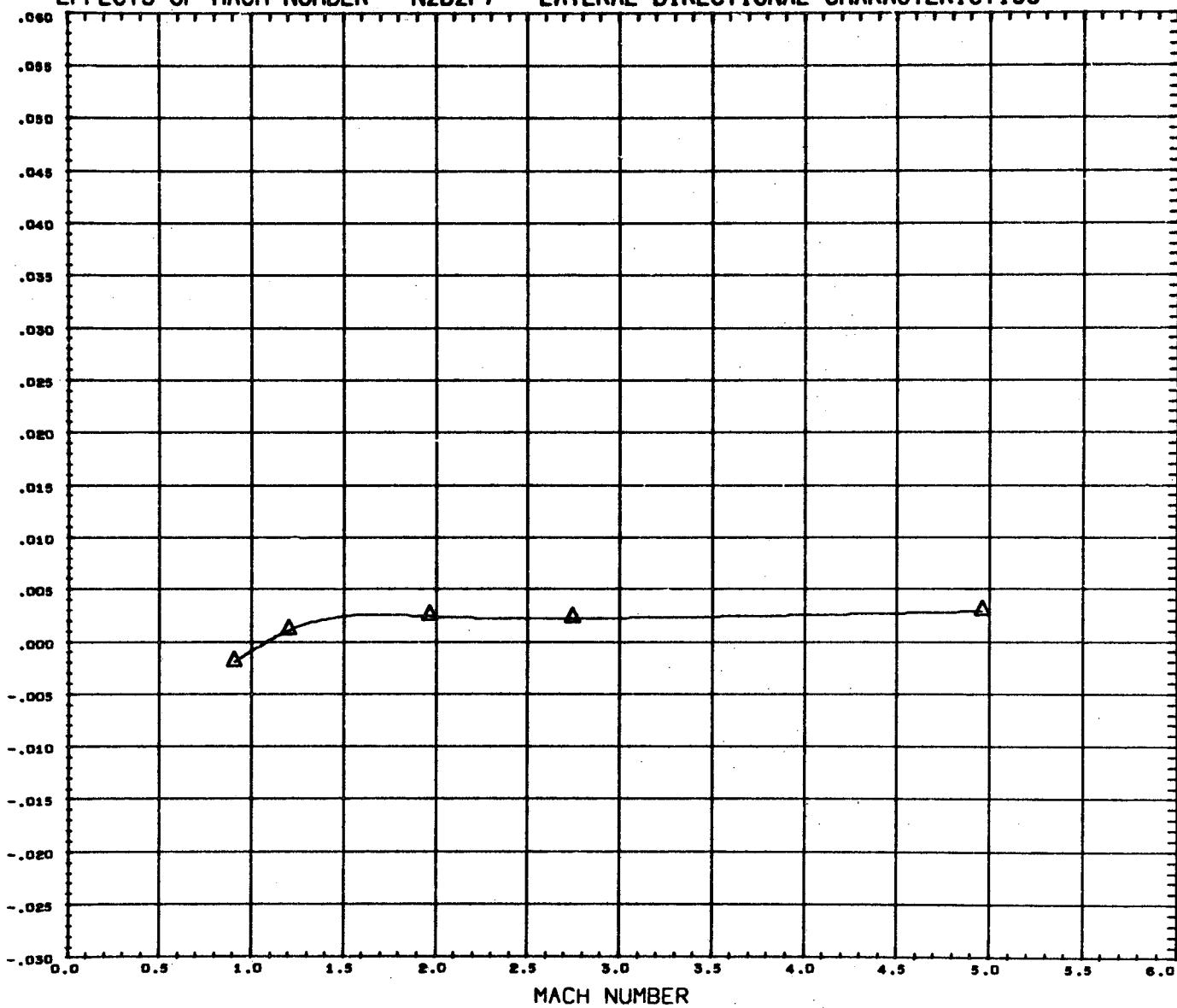
REFERENCE INFORMATION

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BREF	5.8590	IN.
XMRP	3.5150	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

DATA HIST. CODE MS

EFFECTS OF MACH NUMBER - N2B2F7 - LATERAL-DIRECTIONAL CHARACTERISTICS

YAWING MOMENT DERIVATIVE WITH BETA. D(CYN)/DB. PER DEGREE (BODY AXIS)



PARAMETRIC VALUES
ALPHA 50.000 DIMDR 30.000

REFERENCE INFORMATION
SREF 2.159D SQ.IN.
LREF 5.859D IN.
BREF 5.859D IN.
XMRP 3.515D IN.
YMRP 0.0000 IN.
ZMRP 0.0000 IN.
SCALE 0.0034

DATA HIST. CODE MS

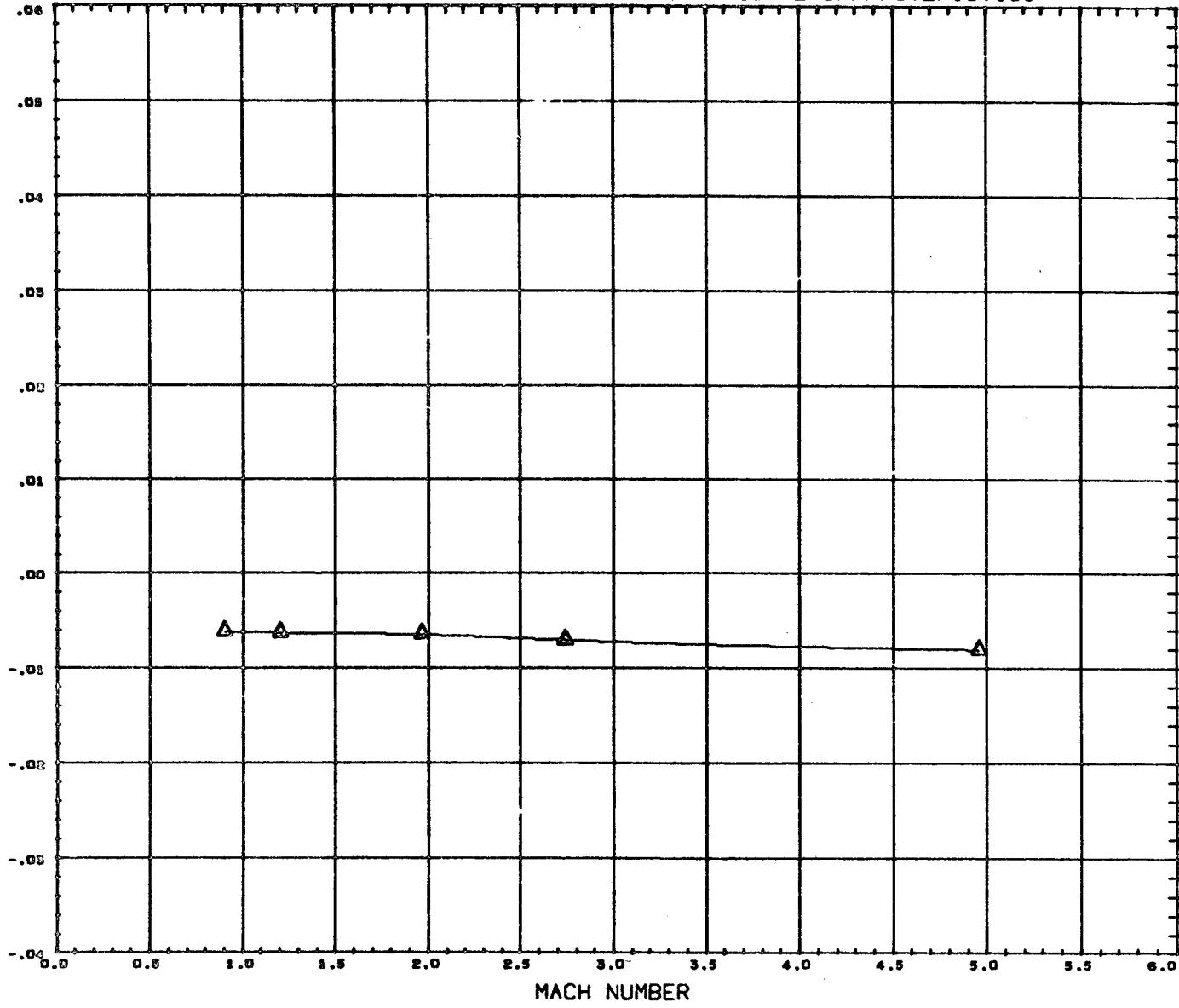
MSFC 518 PRESS FED BOOSTER CONFIG X N2B2F7

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ROLLING MOMENT DERIVATIVE WITH BETA, D(CBL)/DB, PER DEGREE (BODY AXIS)

EFFECTS OF MACH NUMBER - N2B2F7 - LATERAL-DIRECTIONAL CHARACTERISTICS

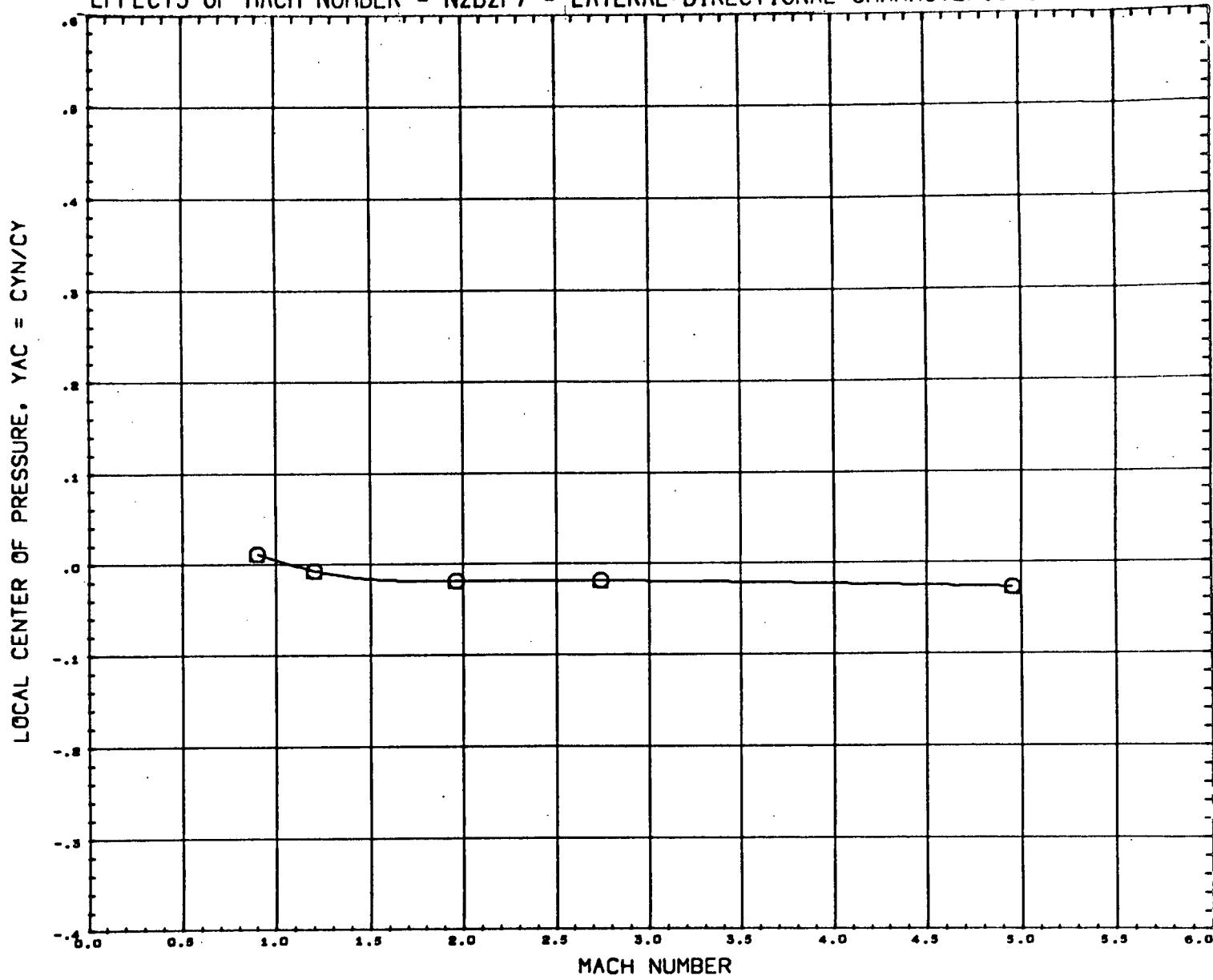


PARAMETRIC VALUES
ALPHA 50.000 DIHDR 30.000

DATA MAST. CODE MS

REFERENCE INFORMATION
SREF 2.1590 SQ.IN.
LREF 5.8590 IN.
BREF 5.8590 IN.
XMRP 3.5150 IN.
YMRP 0.0000 IN.
ZMRP 0.0000 IN.
SCALE 0.0034

EFFECTS OF MACH NUMBER - N2B2F7 - LATERAL-DIRECTIONAL CHARACTERISTICS



SYMBOL
O

PARAMETRIC VALUES

ALPHA 50.000 DMDRL 30.000

REFERENCE INFORMATION

BREF	2.1590	IN.
LREF	5.8590	IN.
BREF	5.8590	IN.
XMRP	3.5150	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

DATA MIST. CODE MSCI

MSFC 518 PRESS FED BOOSTER CONFIG X N2B2F7

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